Information to inform Appropriate Assessment Screening of a proposed project at Baldoyle, Dublin 13.

Limosa Environmental
ecological & environmental consultancy

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1. Introduction and background

Limosa Environmental was commissioned to undertake an ecological assessment and to provide information to inform the Appropriate Assessment screening process in relation to a proposed project at Baldoyle, Dublin 13.

The obligation to undertake Appropriate Assessment arises from Articles 6 (3) and (4) of European Union (EU) Council Directive 92/43/EEC (Habitats Directive) and transposed into Irish law by the European Communities (Birds and Natural Habitats) Regulations S.I. No 477 of 2011; as amended by European Communities (Birds and Natural Habitats) Regulations 2011-2021. Screening is the first stage of an Appropriate Assessment (AA) and aims to establish whether a proposed plan or project (in this case a project) either alone or in combination with other plans or projects, could have significant negative effects on a Natura 2000 site in view of the site's conservation objectives. At Stage 2 (Appropriate Assessment), the impact of a project or plan alone and in combination with other projects or plans on the integrity of the Natura 2000 site is considered with respect to the conservation objectives of the site and to its structure and function (DoEHLG, 2009).

Natura 2000 sites (also known as European sites) are Special Areas of Conservation (SACs) designated under the EU Habitats Directive,[1] and Special Protection Areas (SPAs), designated under the EU Birds Directive.[2] As signatories to these Directives, Ireland like other EU Member states, has designated prime areas of ecological importance as SACs and SPAs and these are part of a network of sites of 'community importance' for biodiversity across the EU called the 'Natura 2000' network.

The proposed site at Baldoyle lies close to Baldoyle Bay Special Area of Conservation (SAC Site Code 000199) and Baldoyle Bay Special Protection Area (SPA Site Code 4016), while ecological connectivity may occur with other Natura 2000 sites. This report assesses whether significant impacts are likely to occur upon these designated sites as a result of the proposed project.

2. Methodology

2.1 Appropriate Assessment methodology

There are 4 stages in an Appropriate Assessment as outlined in the European Commission Guidance document (EU Commission, 2001). The following is a brief summary of these steps.

Stage 1 - Screening: This stage examines the likely effects of a project/plan either alone or in combination with other projects/plan upon a Natura 2000 site and considers whether it can be objectively concluded that these effects will not be significant (Table 1). The assessment of significance is carried out in consultation with the relevant nature conservation agencies.

[1] Council Directive 92/43/EEC on the conservation of natural habitats and wild flora and fauna, as amended by Council Directive 97/62/EC. The Directive was transposed into Irish law by the European Communities (Natural Habitats) Regulations 2011, amended and later consolidated by the European Communities (Birds and Natural Habitats) Regulations 2011 – 2021.
[2] Directive 2009/147/EC (Birds Directive) on the conservation of wild birds (the codified version of Council Directive 79/409/EEC as amended).

Table 1. Steps for the undertaking of AA Screening

Step One	*Determination of whether the plan or project is directly connected with the necessary management of the Natura 2000 site.*
Step Two	*Description of the proposed project/plan and the description of other plans/projects that in combination have the potential to have significant effects on a Natura 2000 site.*
Step Three	*Characteristics of the site. Identification of relevant Natura 2000 sites, and compilation of information on their qualifying interests and conservation objectives. Identification of the potential effects upon a Natura 2000 site and characterisation of the site as a whole to identify where impacts are most likely to fall.*
Step Four	*Assessment of the significance of effects on the Natura 2000 site.* *If the effects are deemed to be significant then the process must pass to Stage 2 – Appropriate Assessment.*

Stage 2 - Appropriate Assessment: In this stage, the impact of the project on the integrity of the Natura 2000 site is considered with respect to the conservation objectives in place for site.

Stage 3 - Assessment of Alternative Solutions: Should the Appropriate Assessment determine that adverse impacts are likely upon a Natura 2000 site, this stage examines alternative ways of implementing the project that, where possible, avoid these adverse impacts.
In the absence of any reasonable alternatives for a project/plan that would be less damaging to the integrity of a Natura 2000 site, it is then necessary to proceed to Stage 4.

Stage 4 - Where imperative reasons of overriding public interest (IROPI) exist, an assessment to consider whether compensatory measures will or will not effectively offset the damage to the Natura site will be necessary.

The statutory agency responsible for designated areas in Ireland is the National Parks & Wildlife Service of the Department of Housing, Local Government and Heritage.

2.2 Assessment methods

- **Identification of Natura 2000 sites**

The proximity of proposed development sites to Natura 2000 sites is of importance when identifying potential impacts. The zone of influence (ZOI), i.e. the area over which impacts can occur, varies from project to project based on a range of factors including development type, scale, size and location. Irish guidance (DoEHLG, 2009) states '*For projects, the distance could be much less than 15 km, and in some cases less than 100m, but this must be evaluated on a case-by-case basis with reference to the nature, size and location of the project, and the sensitivities of the ecological receptors, and the potential for in combination effects*.' In the case of the current proposed development and considering all factors, Natura 2000 sites within a 15km radius of the proposed site were identified and considered during the assessment.

- **Desk top study**

The study included a review of published literature pertaining to the ecology of the focus study area (defined above). These areas were also viewed using Google Earth, Google maps[3] and Bing maps.[4]
EPA mapping was used to identify the main inland surface waters (e.g. rivers, streams, canals, lakes and reservoirs) within the wider study area. The National Parks and Wildlife Service (NPWS) and

[3] https://www.google.com/maps
[4] https://www.bing.com/maps/

National Biodiversity Data Centre (NBDC) online databases were reviewed concerning sites, habitats and ecological features of interest within the site and wider study area. Various other sources of information were reviewed and are referenced throughout the report as standard.

- **Reporting**

Assessment was undertaken using methods of Ecological Impact Assessment (EcIA) and carried out following the methodology detailed in Appendix 1. The assessment was undertaken with regard to the following documents:

- Assessment of plans and projects significantly in relation to Natura 2000 sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC (EU Commission, Brussels (2021),
- Appropriate Assessment of plans and projects in Ireland: Guidance for planning authorities (DoEHLG, 2009),
- Managing Natura 2000 Sites: The Provisions of Article 6 of the Habitat's Directive 92/43/EEC (Commission Notice C (2018) 7621 final Brussels 21.11.2018),
- Appropriate Assessment Screening for Development Management (Office of the Planning Regulator, 2021),
- Guidelines on the information to be contained in Environmental Impact Statements (EPA, 2017),
- Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland (Chartered Institute of Ecology and Environmental Assessment (CIEEM, 2016).

Where mentioned in the report, habitat classification follows '*A Guide to Habitats within Ireland*' (Fossitt, 2000). A statement of competency for the author of this report is provided in Appendix 2. Where drawings/documentation are referred to from an adjacent permitted development (Racecourse Park), then these are listed in Appendix 3, and appended to this report.

3.0 Description of the proposed project

3.1. Site location

The proposed development site is located along Red Arches Road, The Coast, Baldoyle Racecourse Park, Stapolin, Baldoyle, Dublin 13 (Grid Ref: O 23932 40506 (Figure 1, Figure 2). This brownfield site is bounded to the north, east and south by Balydoyle Racecourse Park, Fingal. High-density residential developments are located c.100m to the west (Figure 2). A site boundary map is shown in Figure 3. The site area is 0.575ha.

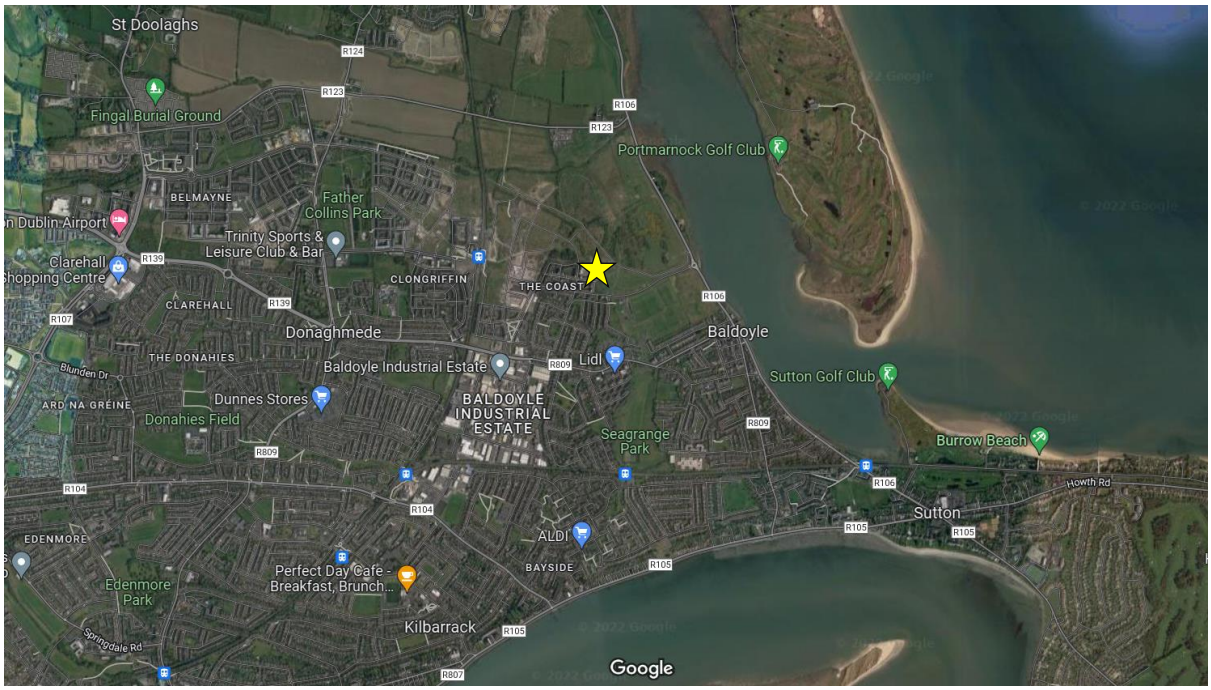

Figure 1. Location of proposed site. The site is indicated by a yellow star (Source: Google maps).

Figure 2. Close up of site location (Source: Google maps).

Figure 3. Site boundary (Source: Henchion Reuters Architects)). Note that the original drawing is appended to this report.

3.2 Project background

Henchion Reuter Architects were commissioned to lead a team to prepare a design for a Community Centre at Racecourse Park, Baldoyle, Dublin 13. The client brief was to engage with stakeholders on their current and future needs in order to develop a proposal for a Sports Hall and Community Centre that delivers a useable, inclusive and multi-faceted amenity. The development of the Community Centre follows a successful Fingal County Council planning application to An Bord Pleanala for a park development project at Racecourse Park, located immediately adjacent to the site proposed for development here. The park and community centre are viewed as an essential part of the implementation of the Portmarnock South and Baldoyle/Stapolin Local Area Plans. These LAPs cater for the construction of at least 2,500 homes and a potential population increase of 10,000 people in the local area (Henchion Reuters Architects, 2022).

The proposed site considered a 'brownfield site,' supports an existing building which was originally built as a marketing suite for adjoining residential development. The site is bounded by Red Arches Road to the north, existing carparking to north and east, and the extended existing playing pitches to the east with children's playground to the south (refer to Figure 2). A public open space with a gated footpath to the playing pitches, separates the Castlerosse View residential estate to the west, from the proposed site.

The objective of the project is to provide a new purpose-built Sports Facility and Community Centre to cater for a wide range of community, recreational, educational and sporting activities in the area. A building with a circular plan form was identified as best facilitating the spatial flow of the park landscaping around the new building. The circular building plan also has the advantage of creating no building corners, thereby minimising the opportunity for unsupervised corners which might be prone to anti-social behaviour. In addition, the circular form has the least external façade possible for the building area provided, meaning it is an efficient building as regards the amount of building materials required for its construction, as well as having the least area of façade that is subject to heat-loss (Henchion Reuters Architects, 2022). The single storey building will have a green roof (Figure 4).

Figure 4. 3D views (Source: Henchion Reuters Architects, 2022). Note that the original drawing is appended to this report.

3.3 Project description

The development description is as follows:

Proposed new Baldoyle Community/Sports Centre on a site of approximately 0.575 ha at former 'Coast' Estate Marketing Suite Buildings/Structures located along Red Arches Road, The Coast, Baldoyle Racecourse Park, Stapolin, Baldoyle, Dublin 13, comprising of the demolition and removal of existing redundant single storey former 'Coast' Estate Marketing Suite Building and single storey Changing Rooms/Storage Shed with all associated structures (all totalling 410 sq m Gross Floor Space), and the construction of the Community/Sports Centre Building with ancillary infrastructure and associated site development works (all totalling 1,320 sq m Gross Floor Space and ranging in height equivalent from 1 to 2 storeys).

The site area is 0.575ha as shown by the red line in Figure 3. The proposed development will consist of:

- *Entrance lobby and reception area, cleaners store and IT/CCTV facility room,*
- *Central sports hall with associated storage,*
- *4 no. externally accessible changing rooms, 2 no. referee rooms, lobbies, toilets facilities and plant room,*
- *4 no. community/multipurpose/studio/meeting rooms with associated storage, kitchen and coffee dock facilities with external servery hatch, toilet and changing facilities,*
- *46 no. bicycle parking spaces (24 no covered) and a surface car park providing a total of 28 no. car parking spaces (2 no. accessible/disabled and 26 no. regular),*
- *Enhanced boundary treatments, hard and soft landscaping, external site lighting, building signage, 3 no. flagpoles, services (including underground surface water attenuation storage) and all other ancillary and associated site development works above and below ground level,*
- *Primary vehicular and pedestrian access to the proposed new Community/Sports Centre will be via the existing vehicle and pedestrian/bicycle accesses from the Red Arches Road, with enhanced secondary pedestrian/bicycle permeability provided to surrounding active and passive open space recreational facilities.*

The proposed site layout plan is shown in Figure 5.

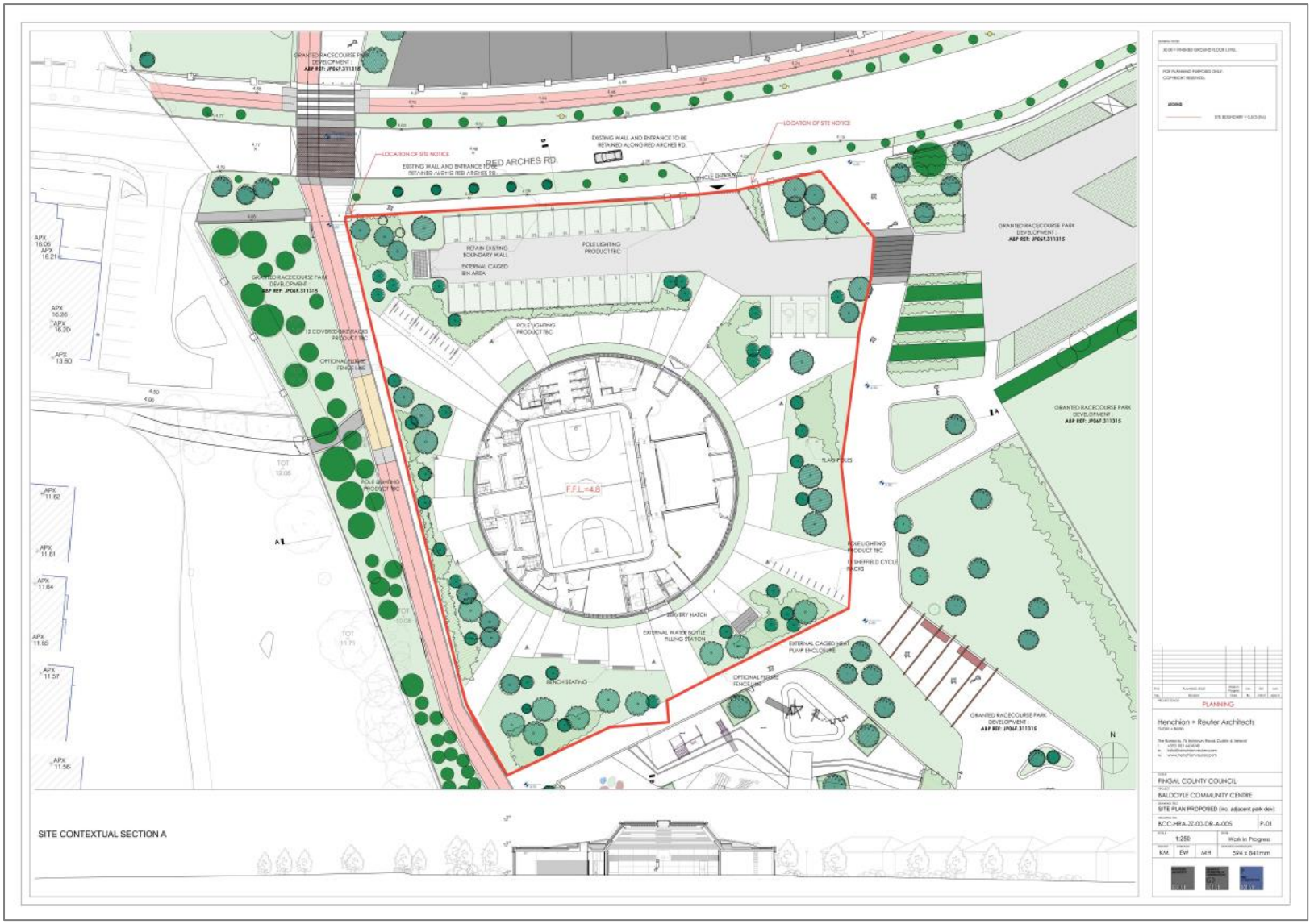

Figure 5. Site layout plan (Source: Henchion Reuters Architects, 2022).

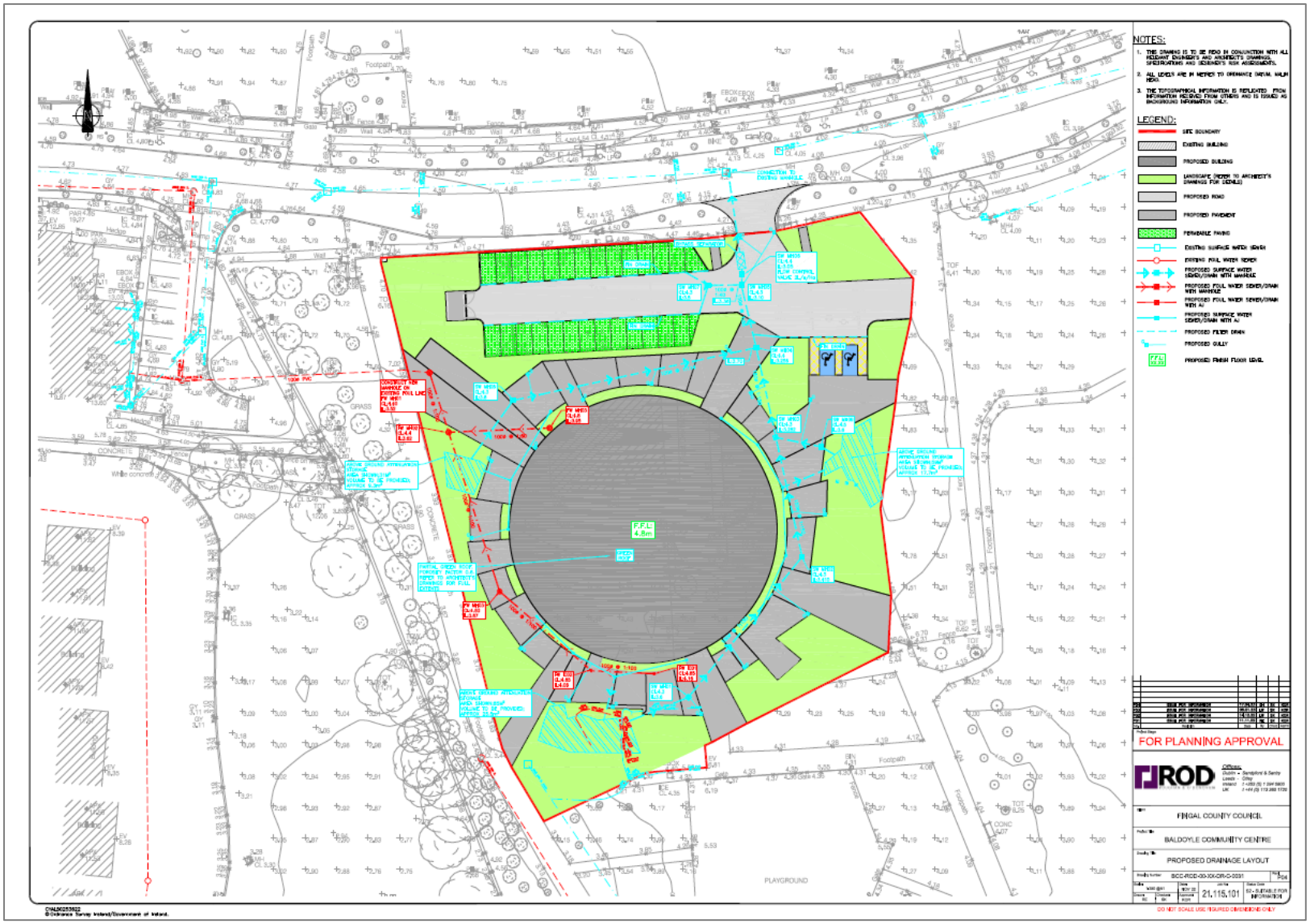

Figure 6. Proposed drainage layout (Source: Roughan & O'Donovan Consulting Engineers, 2023a)

3.4 Project details

Surface water management

There is an existing surface water drainage network located within the site which includes a series of gullies and manholes. This outfalls from the site access to a main surface water sewer located at Red Arches Road. The manhole that the existing network discharges to is identified as manhole S53 on FCC´s ´Taking-In-Charge´ drawing that is included in the engineering report appendices (ROD, 2032a). Adjacent to this, there is another manhole on a separate line, S56, which is also in the charge of FCC. Both lines, that are in the charge of FCC, subsequently flow to the north. No attenuation was recorded on site from the utility survey. An existing petrol interceptor is located adjacent the existing carpark before the outfall to the main sewer.

It is proposed to construct a new surface water drainage system for the building and carpark however, this system will utilise the existing connection to the manhole at Red Arches Road which is in the charge of FCC (Figure 6). The site will be attenuated for the 1-in-100 year + 20% climate change event. It has been calculated that 62.49m^3 of combined on site storage will allow the site to achieve a greenfield discharge rate of 2 L/s without experiencing any flooding on site within the 1 in 100 year + 20% climate change. This is being incorporated through a mixture of underground storage in the form of pipework and permeable paving or grasscrete, above ground attenuation in the form of grassed rain gardens.

The use of soakaways has been confirmed as unfeasible following a ground investigation, for the purpose of these calculations no permeability of the soil has been used to determine the maximum attenuation required. A breakdown of the SUDS features is provided by ROD (2023a) as follows:

SUDS Storage Features		m^3 Storage
Permeable carpark	Area 1	5.01 m^3
	Area 2	4.98 m^3
Above ground attenuation	Area 1	25.5 m^3
	Area 2	9.3 m^3
	Area 3	17.7 m^3
	Total	62.49 m^3

The stormwater system is designed for 50mm/hr rainfall intensity as per Greater Dublin Strategic Drainage Study (GDSDS). They were designed for a minimum self-cleansing velocity of 0.7m/s in accordance with BS EN 16933-2:2017 and the Greater Dublin Strategic Drainage Strategy. However, following consultation with Fingal County Council Drainage department, an allowance for climate change of 20% was included rather than the 10% allowance called up in the GDSDS (ROD, 2023a).

Ultimately, surface water drainage from the site via manhole S53, flows north into the Mayne River (150m north of development site), and then flows into Baldoyle Bay.

During the construction phase, silt collection/management will be implemented by the Contractor to remove silts from surface water prior to discharging to the public sewer. Please refer to ROD (2023b).

Details of SuDS approach (from ROD, 2023a)

The proposed SuDS features will include a combination of Source Control, Site Control and Regional Control measures as part of a 'Management Train' whereby the surface water is managed locally in small sub-catchment rather than being conveyed to and managed in large systems further down the catchment. Where possible the potential for surface water infiltration to the subsoil should always be

utilised to help reduce the impact on the existing surface water drainage network downstream. However, a detailed ground investigation has not yet been carried out on the site. This proposed investigation will include for infiltration tests, and should the ground prove suitable, this will also be incorporated into the system at detailed design stage. It is proposed to provide the following SuDS measures:

- Permeable Paving
- Rain Garden with stone base below
- Surface water pipes
- Green roof
- Petrol interceptor

Attenuation
Attenuation will be provided beneath three rain gardens/soakaways located to the west, south and east of the proposed building. These grassed areas will act as attenuation for the site, allowing surface water to accumulate to a maximum highwater level during a 1 in 100 year (+ 20% storm event). The rainwater will continue to the discharge manhole to the north of the site, where the flow will be restricted to a greenfield runoff rate of 2 L/s.

While it is acknowledged that Fingal County Council discourage the use of underground attenuation on sites, it is noted that the site in this case is extremely tight and that it is simply not possible to meet the storage requirements using other methods alone.

Grasscrete Paving
It is proposed that permeable paving will be used below the car parking area. Permeable Paving design will be subject to further design at detailed design stage. The paving will act as temporary storage for rainwater from the parking and roads to the north of the site. Permeable paving will also act to reduce the discharge of oil spillages from the site, as the primary area where vehicle movements are experienced are to be drained via permeable paving. A petrol interceptor will be provided as an additional means of reducing the discharge of oils and spillages from the site.

Green Roof
It is intended for a portion of the community centre to feature a green roof. This will assist in reducing the runoff rate from the roof and act as treatment for the storm water. The green roof design will be subject to further design at detailed design stage. The roof will not act as storage for water on the roof but an allowance for impermeability has been taken as per the calculations.

Impermeability Factors
The impermeability factors of 0.6 for streets and footways, 0.6 for green roof and 0.1 for grassed areas have been chosen in line with Table 26.14 '*Impermeability and pollution indices for different land use types'* of the SuDS Manual (Woods-Ballard et al. 2015).

Foul water management

The site and the existing building are served by an existing 100mm diameter foul drain which outfalls to the west of the site to a larger 225mm diameter foul sewer network. The existing 100mm diameter foul drain and outfall will be used to serve the new development. There will be some modifications to the drainage lines within the site boundary to cater for the new pop-up locations. A pre-connection

enquiry made to Irish Water has returned an outcome of 'feasible without infrastructure upgrade' (refer to Appendix D of ROD, 2023a).

Water supply

The existing onsite building is connected to the existing watermain network via a connection from the north to the north elevation of the building. There is a second connection located to the north-east of the building to a hydrant located on the raised footway. Both connections exit the site to the north across Red Arches Road to the existing public watermain located in the footway/cycleway (ROD, 2023a). The existing connection is to be utilised as part of the proposed works. A pre-connection enquiry made to Irish Water has returned an outcome of 'feasible without infrastructure upgrade' (refer to Appendix D of ROD, 2023a). The building will be connected via a new meter box to Irish Water details, the position of which will be confirmed during the connection application. The peak daily demand has been calculated as 0.29l/sec.

Flood Risk Assessment

A flood risk assessment (FRA) was carried out (ROD, 2023a) as part of the preliminary design of the project. Flood risk was assessed in terms of (a) tidal flooding, (b) fluvial flooding (watercourses), (c) pluvial (rain and surface water) and (d) development surcharges (flooding from existing surface water sewers). Following analysis, the conclusion of the FRA is that the proposed development is not subject to an adverse risk of flooding. For fluvial and coastal flooding, the Flood Maps indicate that the site is within Flood Zone C (low risk >0.1% AEP). For development surcharges, a detailed surface water analysis has been carried out for the proposed development which shows that the site is anticipated to experience no flooding in a 1 in 100 year plus 20% climate change storm event. Should an extreme storm event occur, the overground attenuation areas will overflow, and surface water will be directed away from the building to ensure the building does not experience flooding from surface water sources (ROD, 2023a).

During 2023, a site-specific flood risk assessment was completed (ROD, 2023c). This assessment considered the local hydrological conditions pertaining to the proposed development and identified flood risk in the vicinity of the development lands. All sources indicate that the proposed development is within Flood Zone C. Suitable flood risk management measures have been adopted to mitigate the likely impacts of climate change. Appropriate measures in the form of Sustainable Drainage Systems (SuDS) for the purpose for managing surface water in terms of both flow and quality, have been adopted as part of the development design in line with Fingal Country Council requirements and the GDSDS. The findings of this SSFRA indicate that flood risk can be managed with negligible effect on flood risk elsewhere. The proposed development satisfies the requirements of the sequential approach (as described in the OPW's "The Planning System and Flood Risk Management Guidelines for Planning Authorities") and is therefore deemed appropriate for the associated flood risk.

Outline Construction Management Plan (OCEMP) (ROD, 2023b)

An outline Construction Environmental Management Plan (OCWMP) has been prepared for this project (ROD, 2023b). The main elements and tasks involved in the construction of the site and the management process of same are:

- Site preparation,
- Establishing site offices, compounds and security,
- Development of site services, surface water drainage, foul drainage, watermains etc,

- Development of substructure, i.e. excavation of foundations, pouring concrete,
- Development of tanks, petrol interceptors, surface water attenuation and firefighting underground storage tanks,
- Construction of building superstructure,
- Finishing to surfaces and landscaping.

The OCEMP covers the topics of general construction site management, site preparation, site construction compound, control of surface water/pollution control, silt management, waste management, traffic management and control of noise, dust and vibration. Please refer to ROD (2023b).

Project timing

The construction project is programmed to begin in April 2024, with demolitions and piling complete by mid-June. The concrete frame, ground floor walls, roof framework structure with external completions (facades & Roof finishes) will be completed by the end of August 2024. Internal completions will then progress through the winter months. Building handover is scheduled for June/July 2025.

4.0 Baseline ecology of the proposed development site

4.1 Habitats and flora

This AA screening assessment was a desk-based study but was informed by ecological surveys undertaken for the planning application for the permitted adjacent redevelopment of Racecourse Park (Scott Cawley, 2019, 2021), where the site assessed here was included in the survey boundary (ABP-311315-21).

The proposed site covers an area of 0.575ha (Figure 3) and is brownfield in nature. Habitats within the proposed site comprise the following: Buildings and artificial surfaces (BL3), Amenity grassland (GA2), and scattered trees and parkland (WD5) (Figure 7). Habitat codes follow Fossitt (2000). No protected flora were recorded in association with the proposed site.

Of note is that a watercourse shown by EPA mapping to flow adjacent to the proposed site (Figure 8) and known as the Snugborough Stream, has been confirmed to be no longer present. This stream is a minor tributary of the River Mayne and is culverted throughout the site. It then emerges into an open channel approximately 150m north of Red Arches Road. This culvert appears to be inoperable due to the significant build-up of silt that was observed during an abandoned manhole/CCTV survey (the small streams and watercourses adjacent to the site (approximately 150m from the site) are tidally dominated at this location).

Figure 7. Habitats within the proposed site and wider Racecourse Park (Source: Scott Cawley, 2019). Proposed site indicated by a white line.

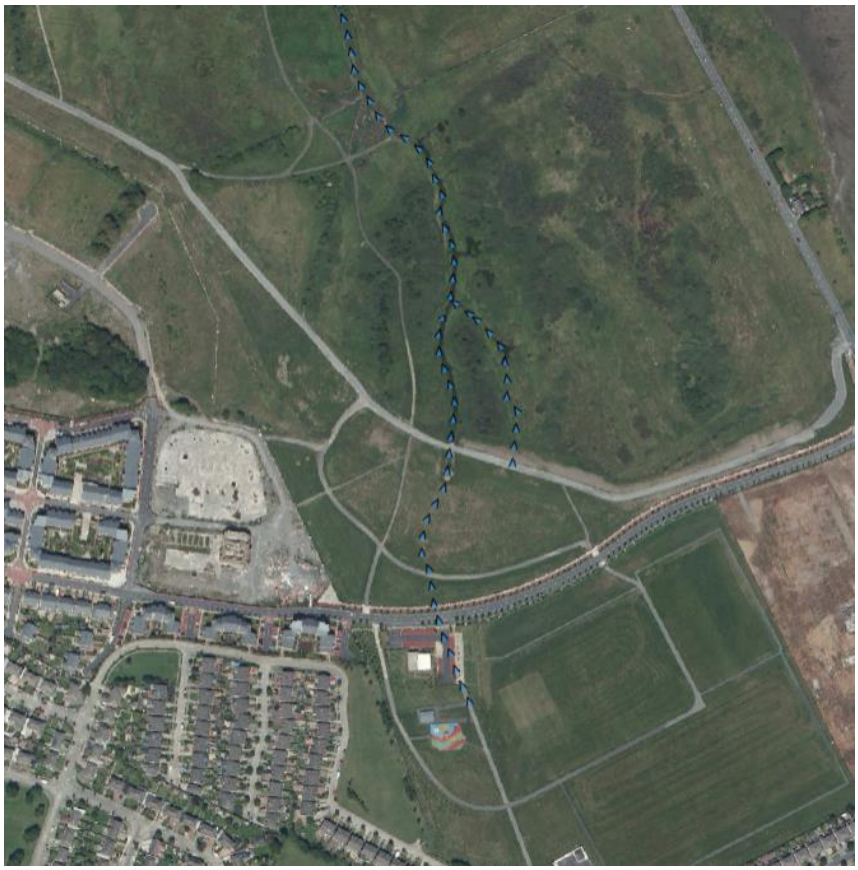

Figure 8. Watercourse running adjacent/slightly inside the proposed site (Source: https://gis.epa.ie/EPAMaps/). This watercourse no longer exists - refer to text for more information.

4.2 Fauna

Based on ecological surveys undertaken for the planning application for the permitted adjacent redevelopment of Racecourse Park (Scott Cawley, 2019, 2021), no rare or protected fauna were recorded previously within the proposed development site.

Of note, and pertinent to this assessment, is that Scott Cawley (2019) highlights results from previous wintering bird surveys which have shown Red Arches Park (playing pitches) (Figure 9), south of Red Arches Road and due south and east of the proposed development site, as supporting foraging Light-bellied Brent Goose *Branta bernicla hrota*, Oystercatcher *Haematopus ostralegus* and Common Gull *Larus canus.* The following text is taken from Scott Cawley (2019):

Winter bird surveys carried out by Scott Cawley in February and March 2019 recorded Light-bellied Brent geese at the playing pitches at Red Arches Park on all but one occasion. Eight separate surveys were carried out, including two weekend surveys. The peak count of Light-bellied Brent geese recorded at Red Arches playing pitches was 800, recorded foraging on the 26th February 2019. The lowest number recorded was 62 on the 21st March. Peak numbers recorded on weekend surveys were below average, 234 on 23rd March and 120 on 30th March (average peak was 345). Based on the ring code data gathered over the eight surveys, 33 individual birds were recorded on site on multiple survey dates. Other birds recorded at the Red Arches pitches over the course of the survey period included Oystercatcher, Mallard, Black-headed Gull Chroicocephalus ridibundus, Herring Gull Larus argentatus, Common Gull, Curlew Numenius arquata, Little Egret Egretta garzetta, Lesser Black-backed Gull Larus fuscus and Black-tailed Godwit Limosa limosa, although none of these species were recorded in

significant numbers. Data gathered during the transect surveys showed that goose droppings were consistently found along transects at each survey visit, indicating that goose activity on the site is high. Geese were often observed flying between Baldoyle SPA and the pitches, indicating that the pitches act as part of a supporting network to the SPA, and the bird populations it contains. Scott Cawley (2019) concluded that '*the Red Arches playing pitches are likely to be of major importance to the Dublin winter population of Light-bellied Brent geese*.'

Figure 9. Red Arches playing pitches highlighted with a red boundary.

Indeed, Red Arches playing pitches have long been known as an inland foraging ground for Light-bellied Brent Goose and several other waterbirds. Benson (2009) on investigating the use of inland foraging sites by Light-bellied Brent geese recorded a peak count of 960 individuals during winter 2008/09, with this inland feeding site ranked fourth in terms of peak counts recorded. The species was recorded during five winter months and the peak count represented numbers of 'international importance.' Red Arches was included in five winter waterbird surveys undertaken during winter 2011/12 (NPWS, 2012b) (Subsite 0UL51) (Table 2). Note, this area is not counted by the Irish Wetland Bird Survey (I-WeBS).

Table 2. Peak waterbird counts recorded at Red Arches count subsite during the NPWS waterbird survey programme of Baldoyle Bay Winter 2011/12.

Species	Peak number (Tidal state)
Light-bellied Brent Goose *Branta bernicla hrota*	8 (High Tide)
Oystercatcher *Haematopus ostralegus*	44 (Low Tide)
Black-tailed Godwit *Limosa limosa*	44 (High Tide)
Curlew *Numenius arquata*	7 (High Tide)
Black-headed Gull *Chroicocephalus ridibundus*	22 (High Tide)
Common Gull *Larus canus*	1 (High Tide)

Red Arches is 3km from the Light-bellied Brent Goose roost site on North Bull Island and is approximately 6.6 hectares in size. There are also roosts at Baldoyle Bay and in South Dublin Bay (Sandymount Strand) (Handby, 2021). The attractiveness of Red Arches for geese may be related to the short distance to roost sites, short distance to Seagrange Park, another foraging site, short distance to intertidal habitat of Baldoyle Bay as well as the area offering the geese panoramic views of their habitat, allowing for early detection of predators (Larkin, 2012). High numbers of geese return here to feed every year as evidenced by Benson (2009). The Irish Brent Goose Research Group (IBGRG) have undertaken canon netting at this site to ring the geese at various times in the past (Larkin, 2012). The playing pitches are in active use while the area is also used by dog walkers (Larkin, 2012).

Use of the Red Arches playing pitches was further investigated in the Natura Impact Assessment for the planning application for the permitted adjacent redevelopment of Racecourse Park (Scott Cawley, 2021). This NIS considered previous survey data for the site (e.g. Pierce & Dillon, 2012; Nairn & Fox, 2017) as well as survey data collected during the period February and March 2019. During this period, geese were recorded on the playing pitches on Red Arches Road during seven of the eight survey visits (87.5% of visits). The highest peak count occurred on the 26th February 2019 when 800 geese were recorded foraging on the pitches. The lowest peak count was of 62 individuals (21st March 2019). Numbers of international importance were recorded on three dates: 26th February (800), 12th March (715) and 15th March (430). (Note, the threshold for international importance is 400 (Lewis et al. 2019). The pitches were in use for matches for parts of the weekend survey visits and therefore there were periods where no geese were present (Scott Cawley, 2021).

Disturbance events were recorded on all except one of the survey visits. Disturbance impacts ranged from high to low. High impact disturbances included the following: dogs chasing geese, dogs on leads, loose dogs, unknown disturbances and children running at flocks of geese. Moderate impact disturbances included dog walkers, loose dogs, cyclists, runners, dogs on leads, children running towards flocks of geese, dogs chasing geese, children kicking footballs, workers and van on pitches, line painting on pitches and seagulls swooping. Low impact disturbances mainly consisted of solitary walkers and runners. For most low and moderate impact disturbances the geese responded by walking away from the disturbance source. High impact disturbances usually resulted in geese leaving the site, either by flying east towards Baldoyle Bay or south towards Seagrange Park (Scott Cawley, 2021).

More recent research on the habitat use and movement patterns of a sub-population of Light-bellied Brent geese overwintering in Dublin city and the surrounding area was undertaken by Tess Handby as part of a PhD programme at the University of Exeter, Cornwall, and in collaboration with the Irish Brent Goose Research Group (IBGRG). Across two winter seasons (2018/19 and 2019/20) the survey team caught 348 Light-bellied Brent geese by cannon netting and marked each caught individual with uniquely identifiable leg rings to improve long term monitoring opportunities. During the catches the team also deployed 80 GPS devices to geese (40 each season). GPS locations were recorded at 30-minute intervals during daylight and the GPS was disabled after astrological twilight, taking only one location fix overnight (Handby, 2021). The marked and GPS tagged geese therefore provide a unique opportunity to understand the movements of geese across Dublin City and surrounding areas. Of note is that Red Arches playing pitches were ranked the top used goose *ex situ* site based on peak location fixes recorded in winter 2018/19 (922 geese – international importance). It is important to note however that the site rankings were calculated from a tally of the number of GPS fixes recorded at each site and did not take into account the number of days the site was used or how many different individuals were recorded there. During winter 2019/20 however, Red Arches playing pitches was ranked 18th (out of 20) based on tally of location fixes recorded at the site during the sampling period.

Recent bird survey work for Baldoyle Racecourse Park (Scott Cawley, 2022b) again highlights the importance of the area for Light-bellied Brent geese. A peak count of 726 individuals was recorded on 8th March 2022, representing numbers of international importance. During winter 2021/22 numbers of international importance were recorded on two occasions. Scott Cawley (2022) also noted a higher frequency of use during the mid-late winter season (i.e. January – March).

5.0 Designated sites for nature conservation

5.1 Determining relevant Natura 2000 sites

AA screening focuses upon impacts on Natura 2000 sites and their qualifying habitats and species. Of importance therefore is the assessment as to whether predicted impacts will be significant. Significance should be established in light of, amongst other things, the characteristics and specific environmental conditions of the site concerned, and the likely effects of the plan or project. If a plan or project is likely to undermine any of the site's conservation objectives it must be considered likely to have a **significant effect** on that site (EC, 2018). Conversely, if a plan or project will have impacts on a site, but these impacts will clearly not affect or undermine those conservation objectives, then it is considered that the project/plan will not have a significant effect on the site concerned (DoEHLG, 2009).

An essential first step in the assessment process is the determination of whether there is an overlap or coincidence between the qualifying interest habitats and species of Natura 2000 sites and the 'zone of influence' of the proposed development. The zone of influence (ZOI) of a proposed development can be defined as the geographical area over which it could affect the receiving environment in a way that could have significant effects on the Qualifying Interests of a European site. This should be established on a case-by-case basis using the Source-Pathway-Receptor framework (OPR, 2021). Natura 2000 sites are considered 'relevant' where a source-pathway-receptor link exists between the proposed development and the Natura 2000 site.

EC guidance highlights how the likelihood of significant effects may arise not only from plans or projects located **within** a protected site but also from plans or projects located **outside** a protected site. For example, a wetland may be damaged by a drainage project located some distance outside the wetland's boundaries, or a site may be impacted by an emission of pollutants from an external source. For this reason, it is important that Member States, both in their legislation and in their practice, allow for the Article 6(3) safeguards to be applied to any development pressures – including those which are external to Natura 2000 sites, but which are likely to have significant effects on any of them (EC, 2018).

Natura 2000 sites within a 15km radius of the proposed development were identified (Figure 10). We then assessed whether there is an overlap/coincidence or connectivity between the Natura 2000 sites and the proposed development site (Table 3). Where such connectivity exists, these Natura 2000 sites are considered to be 'relevant' and the potential for impacts is considered further in this report.

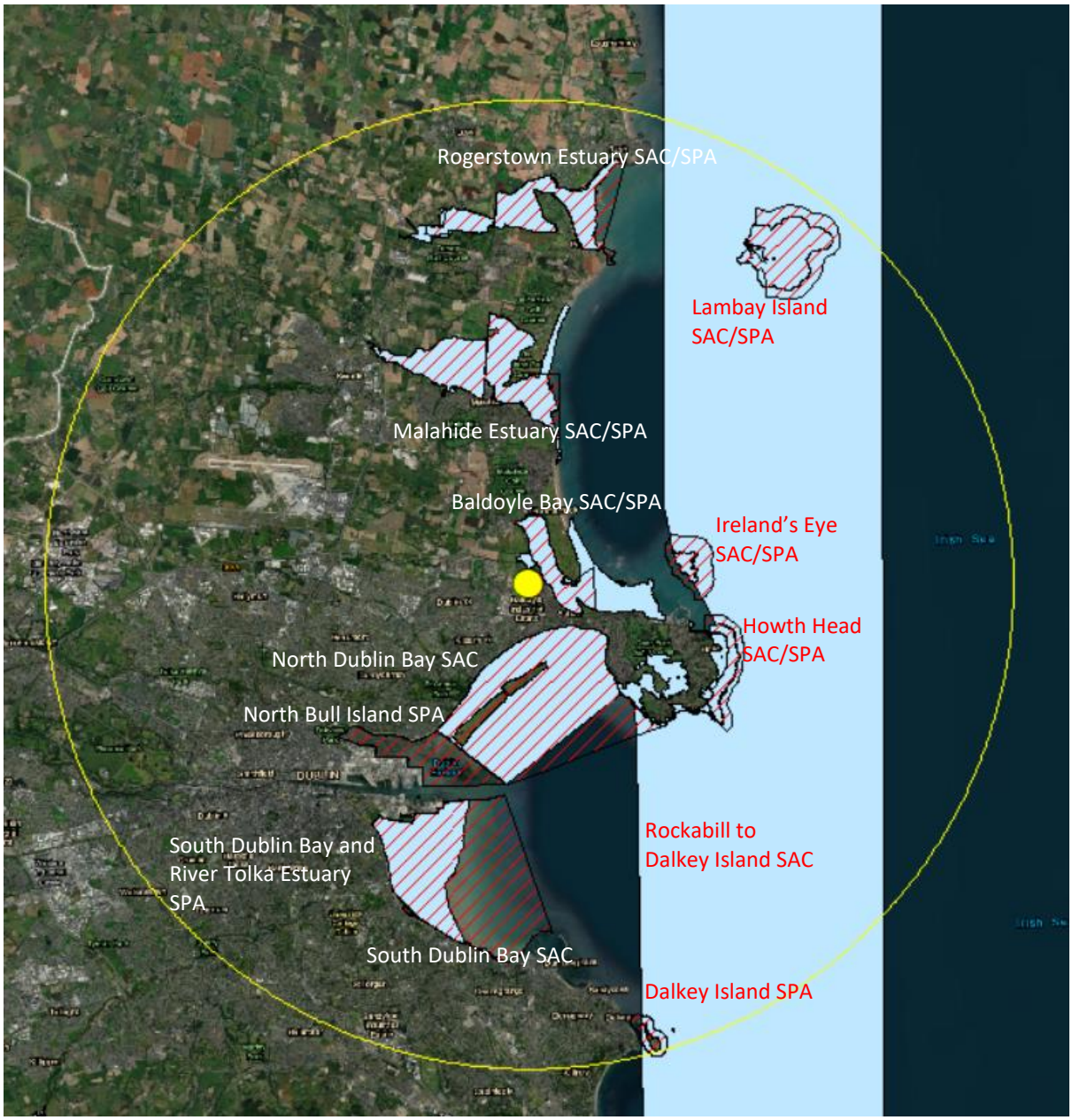

Figure 10. Natura sites within a 15km radius of the proposed site. Position of the proposed site shown by a yellow dot. Special Protection Areas are shown using a red hatching; Special Areas of Conservation are shaded pale blue.

Table 3. Natura 2000 sites within a 15km radius of the proposed site and an assessment of relevance i.e. does a source-pathway-receptor links exist between the proposed development site and the Natura 2000 site.

Site name, site code and distance	Qualifying Interests	Potential for source-pathway-receptor links exist between the proposed development site and the Natura 2000 site
Special Areas of Conservation (SAC)		
Baldoyle Bay SAC (000199) *c*. 430m at closest point	Conservation Objectives Version 1.0 (NPWS, 2012) - Mudflats and sandflats not covered by seawater at low tide [1140] - Salicornia and other annuals colonising mud and sand [1310] - Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] - Mediterranean salt meadows (Juncetalia maritimi) [1410]	**Yes.** There is a potential pathway between the proposed development site and Baldoyle Bay SAC via the proposed surface water drainage network that discharges to the Mayne River/Baldoyle Bay. Note, there is no potential pathway between the proposed development site and Baldoyle Bay SAC via the Snugborough Stream. This stream no longer exists. It is a minor tributary of the River Mayne and is culverted throughout the site. It then emerges into an open channel approximately 150m north of Red Arches Road. This culvert appears to be inoperable due to the significant build-up of silt that was observed during an abandoned manhole/CCTV survey (the small streams and watercourses adjacent to the site (approximately 150m from the site) are tidally dominated at this location).
Ireland's Eye SAC (002193) *c.* 4.7km east	Conservation Objectives Version 1.0 (NPWS, 2017) - Perennial vegetation of stony banks [1220] - Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	No, there is no potential pathway between the proposed development site and Ireland's Eye SAC.
Malahide Estuary (000205) *c.* 3.8km north	Conservation Objectives Version 1.0 (NPWS, 2013) - Mudflats and sandflats not covered by seawater at low tide [1140] - Salicornia and other annuals colonising mud and sand [1310] - Spartina swards (*Spartinion maritimae*) [1320] - Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] - Mediterranean salt meadows (*Juncetalia maritimi*)	No, there is no potential pathway between the proposed development site and Malahide Estuary SAC.

	[1410] - Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] - Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	
Howth Head SAC (000202) *c.* 4km southeast	Conservation Objectives Version 1.0 (NPWS, 2016) - Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] - European dry heaths [4030]	No, there is no potential pathway between the proposed development site and Howth Head SAC.
North Dublin Bay SAC (000206) *c*. 1.5km south	Conservation Objectives Version 1.0 (NPWS, 2013b) - Mudflats and sandflats not covered by seawater at low tide [1140] - Annual vegetation of drift lines [1210] - Salicornia and other annuals colonising mud and sand [1310] - Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] - Mediterranean salt meadows (Juncetalia maritimi) [1410] - Embryonic shifting dunes [2110] - Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] - Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] - Humid dune slacks [2190] - *Petalophyllum ralfsii* (Petalwort) [1395]	**Yes,** there is an indirect hydrological potential pathway between the proposed development site and North Dublin Bay SAC via foul water. Foul water from the proposed development will be treated at Ringsend WWTP, which ultimately discharges to the lower Liffey Estuary. .

Rockabill to Dalkey Island SAC (003000) *c*. 5km east	Conservation Objectives Version 1.0 (NPWS, 2013c) - Reefs [1170] - *Phocoena phocoena* (Harbour Porpoise) [1351]	No, there is no potential pathway between the proposed development site and Rockabill to Dalkey Island SAC.
Lambay Island SAC (000204) *c.* 11.5km north-east	Conservation Objectives Version 1.0 (NPWS, 2013d) - Reefs [1170] - Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] - *Halichoerus grypus* (Grey Seal) [1364] - *Phoca vitulina* (Harbour Seal) [1365]	No, there is no potential pathway between the proposed development site and Lambay Island SAC.
Rogerstown Estuary SAC (000208) *c.* 10.5km north	Conservation Objectives Version 1.0 (NPWS, 2013e) - Estuaries [1130] - Mudflats and sandflats not covered by seawater at low tide [1140] - Salicornia and other annuals colonising mud and sand [1310] - Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] - Mediterranean salt meadows (Juncetalia maritimi) [1410] - Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] - Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No, there is no potential pathway between the proposed development site and Rogerstown Estuary SAC.
South Dublin Bay SAC (000210) *c*. 7km south-west	Conservation Objectives Version 1.0 (NPWS, 2013f) - Mudflats and sandflats not covered by seawater at low tide [1140] - Annual vegetation of drift lines [1210]	**Yes,** there is an indirect hydrological potential pathway between the proposed development site and North Dublin Bay SAC via foul water. Foul water from the proposed development will be treated at Ringsend WWTP, which ultimately discharges to the lower Liffey Estuary.

	- Salicornia and other annuals colonising mud and sand [1310] - Embryonic shifting dunes [2110]	
Site name, site code and distance	**Special Conservation Interests (SCIs)**	**Potential for source-pathway-receptor links exist between the proposed development site and the Natura 2000 site**
Special Protection Areas (SPA)		
Baldoyle Bay SPA (004016) <500m east	Conservation Objectives Version 1.0 (NPWS, 2013g) - Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] - Shelduck (*Tadorna tadorna*) [A048] - Ringed Plover (*Charadrius hiaticula*) [A137] - Golden Plover (*Pluvialis apricaria*) [A140] - Grey Plover (*Pluvialis squatarola*) [A141] - Bar-tailed Godwit (*Limosa lapponica*) [A157] - Wetland and Waterbirds [A999]	**Yes**, a potential source-receptor pathway exists between the proposed development site and this SPA because it is known that Light-bellied Brent geese associated with Baldoyle Bay use areas surrounding the proposed development site for foraging during winter. For instance, the site known as 'Red Arches' has been known to be a key inland foraging site as far back as 2008 (Benson, 2009), and likely earlier as the Brent geese in Dublin have been exploiting man-made habitats in the form of amenity grasslands since the 1980s (O'Briain & Healy. 1991). Goose use of areas within and close to Racecourse Park were also studied as part of the pre-planning survey work for the Racecourse Park re-development application (Scott Cawley, 2021). Baldoyle Bay SPA Conservation Objectives Supporting Document (NPWS 2012b also refer to Red Arches. Recent studies by Handy (2021) confirm the importance of the Red Arches playing pitches for foraging Light-bellied Brent geese. Red Arches playing pitches are therefore recognised as an *ex-situ* feeding site for the species and the site is considered part of the network of *ex-situ* feeding areas used by Light-bellied Brent geese in the wider Dublin Bay area. While the proposed development under assessment is that of a brownfield site with no potential for direct habitat loss, there may be a potential for an indirect loss of foraging habitat due to disturbance. This requires further assessment. As part of this further assessment, consideration should also be given to other listed waterbird SCI species that may also feed in terrestrial habitat namely Golden Plover. Note, there is no potential pathway between the proposed development site and Baldoyle Bay SPA via the Snugborough Stream. This stream no longer exists. It is a minor tributary of the River Mayne and is culverted throughout the site. It then

		emerges into an open channel approximately 150m north of Red Arches Road. This culvert appears to be inoperable due to the significant build-up of silt that was observed during an abandoned manhole/CCTV survey (the small streams and watercourses adjacent to the site (approximately 150m from the site) are tidally dominated at this location).
Ireland's Eye SPA (004117) *c.* 4.3km east	Conservation Objectives Generic Version 1 (NPWS, 2022) - Cormorant (*Phalacrocorax carbo*) [A017] - Herring Gull (*Larus argentatus*) [A184] - Kittiwake (*Rissa tridactyla*) [A188] - Guillemot (*Uria aalge*) [A199] - Razorbill (*Alca torda*) [A200]	No, there is no potential pathway between the proposed development site and Ireland's Eye SPA. Kittiwake, Guillemot and Razorbill are cliff-nesting seabirds and spend their life cycle almost exclusively at sea, apart from when nesting on cliffs, in this case on Ireland's Eye (Newton et al. 2015). Cormorants are also cliff-nesting seabirds but are also found in freshwater systems including lakes and rivers. However, the proposed site affords no suitable habitats for Cormorant. Herring Gulls nest on cliffs but also range more widely including inland when foraging; whilst also sometimes nesting on buildings. Overall however, Herring Gulls associated with Ireland's Eye are highly unlikely to be associated with the proposed development site in any number and negative impacts are considered highly unlikely.
Howth Head Coast SPA (004113) *c.* 5.5km south-east	Conservation Objectives Generic Version 1.0 (NPWS, 2022b) - Kittiwake (*Rissa tridactyla*) [A188]	No, there is no potential pathway between the proposed development site and Howth Head SPA. Kittiwake is a cliff-nesting seabirds and spends its life cycle almost exclusively at sea, apart from when nesting on cliffs, in this case on Howth Head. The seabird colony on Howth Head occupies a 3km long, mostly east-facing cliff section running from Balscadden Bay to the Bailey Lighthouse (Newton et al. 2015). There is no potential for this seabird species to be impacted by the proposed development.
Lambay Island SPA (004069) *c.* 11.6km north-east	Conservation Objectives Generic Version 1.0 (NPWS, 2022c) - Fulmar (*Fulmarus glacialis*) [A009] - Cormorant (*Phalacrocorax carbo*) [A017] - Shag (*Phalacrocorax aristotelis*) [A018] - Greylag Goose (*Anser anser*) [A043] - Lesser Black-backed Gull (*Larus fuscus*) [A183] - Herring Gull (*Larus argentatus*) [A184]	No, there is no potential pathway between the proposed development site and Lambay Island SPA. The listed SCI species are largely all seabirds and spend their life cycle almost exclusively at sea, apart from when nesting on cliffs, in this case on Lambay Island. Cormorants are cliff-nesting seabirds but are also found in freshwater systems including lakes and rivers. However, the proposed site affords no suitable habitats for Cormorant. Herring Gulls nest on cliffs but also range more widely including inland when foraging; whilst also sometimes nesting on buildings. Overall however, Herring Gulls associated with Lambay Island are highly unlikely to

	- Kittiwake (*Rissa tridactyla*) [A188] - Guillemot (*Uria aalge*) [A199] - Razorbill (*Alca torda*) [A200] - Puffin (*Fratercula arctica*) [A204]	be associated with the proposed development site in any number and negative impacts are considered highly unlikely. Greylag geese are migratory wintering waterbirds, originating from breeding grounds in Iceland. Lambay was once used by >1,000 Icelandic Greylag geese until at least the 1980's. Numbers recorded during a census in 1986 showed that Lambay was the largest wintering site for the population in Ireland (Merne, 1986). Nowadays few geese occur and the last records are from 2008 (60 geese). It is thought that Greylag geese from Rogerstown Estuary may use Lambay Island from time to time (Burke et al. 2022). Overall given their increasing scarcity, Greylag geese are highly unlikely to be associated with, or impacted by, the proposed development.
North Bull Island SPA (004006) *c.* 1.1km south	Conservation Objectives Version 1.0 (NPWS, 2015) - Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] - Shelduck (*Tadorna tadorna*) [A048] - Teal (*Anas crecca*) [A052] - Pintail (*Anas acuta*) [A054] - Shoveler (*Anas clypeata*) [A056] - Oystercatcher (*Haematopus ostralegus*) [A130] - Golden Plover (*Pluvialis apricaria*) [A140] - Grey Plover (*Pluvialis squatarola*) [A141] - Knot (*Calidris canutus*) [A143] - Sanderling (*Calidris alba*) [A144] - Dunlin (*Calidris alpina*) [A149] - Black-tailed Godwit (*Limosa limosa*) [A156] - Bar-tailed Godwit (*Limosa lapponica*) [A157] - Curlew (*Numenius arquata*) [A160] - Redshank (*Tringa totanus*) [A162] - Turnstone (*Arenaria interpres*) [A169]	**Yes**, a potential source-receptor pathway exists between the proposed development site and this SPA because it is known that Light-bellied Brent geese that use the roost on North Bull Island use areas surrounding the proposed development site for foraging during winter. The site known as 'Red Arches' has been known to be a key inland foraging site as far back as 2008 (Benson, 2009), and likely earlier as the Brent geese in Dublin have been exploiting man-made habitats in the form of amenity grasslands since the 1980s (O'Briain & Healy. 1991). Goose use of areas within and close to Racecourse Park were also studied as part of the pre-planning survey work for the Racecourse Park re-development application (Scott Cawley, 2021). Baldoyle Bay SPA Conservation Objectives Supporting Document (NPWS 2012b also refer to Red Arches. Recent studies by Handy (2021) confirm the importance of the Red Arches playing pitches for foraging Light-bellied Brent geese. Recent studies by Handy (2021) confirm the importance of the Red Arches playing pitches for foraging Light-bellied Brent geese. Red Arches playing pitches are therefore recognised as an *ex-situ* feeding site for the species and the site is considered part of the network of *ex-situ* feeding areas used by Light-bellied Brent geese in the wider Dublin Bay area. While the proposed development under assessment is that of a brownfield site with no potential for direct habitat loss, there may be a potential for an indirect loss of foraging habitat due to disturbance. This requires further assessment. As part of this further assessment, consideration should also be given to other listed waterbird SCI

	- Black-headed Gull (*Chroicocephalus ridibundus*) [A179] - Wetland and Waterbirds [A999]	species that may also feed in terrestrial habitat namely Oystercatcher, Golden Plover, Black-tailed Godwit, Curlew, Redshank and Black-Headed Gull. There is also an indirect hydrological potential pathway between the proposed development site and North Bull Island SPA via foul water. Foul water from the proposed development will be treated at Ringsend WWTP, which ultimately discharges to the lower Liffey Estuary.
Malahide Estuary SPA (004025) *c.* 4.5km north-east	Conservation Objectives Version 1.0 (NPWS, 2013h) - Great Crested Grebe (*Podiceps cristatus*) [A005] - Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] - Shelduck (*Tadorna tadorna*) [A048] - Pintail (*Anas acuta*) [A054] - Goldeneye (*Bucephala clangula*) [A067] - Red-breasted Merganser (*Mergus serrator*) [A069] - Oystercatcher (*Haematopus ostralegus*) [A130] - Golden Plover (*Pluvialis apricaria*) [A140] - Grey Plover (*Pluvialis squatarola*) [A141] - Knot (*Calidris canutus*) [A143] - Dunlin (*Calidris alpina*) [A149] - Black-tailed Godwit (*Limosa limosa*) [A156] - Bar-tailed Godwit (*Limosa lapponica*) [A157] - Redshank (*Tringa totanus*) [A162] - Wetland and Waterbirds [A999]	**Yes**, a potential source-receptor pathway exists between the proposed development site and this SPA because it is known that there is some interchange between a subset of the Light-bellied Brent Goose population that moves between Malahide Estuary, Baldoyle Bay and North Bull Island (north end) roosts (Handby, 2021). The geese use terrestrial areas for foraging (ex situ sites) within the Dublin area, and hence, geese that forage in areas surrounding the proposed development site during winter may be associated with Malahide Estuary. While the proposed development under assessment is a brownfield site with no potential for direct habitat loss, there may be a potential for an indirect loss of foraging habitat due to disturbance. This requires further assessment. As part of this further assessment, consideration should also be given to other listed waterbird SCI species that may also feed in terrestrial habitat namely Oystercatcher, Golden Plover, Black-tailed Godwit and Redshank.

Rogerstown Estuary SPA (004015) *c.* 10.3km north-east	Conservation Objectives Version 1.0 (NPWS, 2013i) - Greylag Goose (*Anser anser*) [A043] - Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] - Shelduck (*Tadorna tadorna*) [A048] - Shoveler (*Anas clypeata*) [A056] - Oystercatcher (*Haematopus ostralegus*) [A130] - Ringed Plover (*Charadrius hiaticula*) [A137] - Grey Plover (*Pluvialis squatarola*) [A141] - Knot (*Calidris canutus*) [A143] - Dunlin (*Calidris alpina*) [A149] - Black-tailed Godwit (*Limosa limosa*) [A156] - Redshank (*Tringa totanus*) [A162] - Wetland and Waterbirds [A999]	**Yes**, as above, a potential source-receptor pathway may exist between the proposed development site and this SPA. Handby (2021) suggests that the geese that roost at Rogerstown Estuary frequent inland foraging sites close to the estuary and therefore may not make movements as far as Baldoyle or Dublin Bay. However, as a precautionary approach Rogerstown Estuary is screened in, because study results by Handby (2021) are based on a subset of the population (caught and GPS tagged/tracked birds). We cannot rule out with confidence that there is no interchange between the geese considered to be Rogerstown Estuary geese, and those considered to be associated with Dublin Bay and surrounds. As Light-bellied Brent geese use terrestrial areas for foraging (*ex situ* sites) within the Dublin area, including Red Arches playing pitches, we cannot rule out that the geese that forage in areas surrounding the proposed development site during winter may be associated with Rogerstown Estuary. While the proposed development under assessment is a brownfield site with no potential for direct habitat loss, there may be a potential for an indirect loss of foraging habitat due to disturbance. This requires further assessment. As part of this further assessment, consideration should also be given to other listed waterbird SCI species that may also feed in terrestrial habitat namely Oystercatcher, Black-tailed Godwit and Redshank.
South Dublin Bay and River Tolka Estuary SPA (004024) *c.* 7.2km south	Conservation Objectives Version 1.0 (NPWS, 2015b) - Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] - Oystercatcher (*Haematopus ostralegus*) [A130] - Ringed Plover (*Charadrius hiaticula*) [A137] - Grey Plover (*Pluvialis squatarola*) [A141] - Knot (*Calidris canutus*) [A143] - Sanderling (*Calidris alba*) [A144] - Dunlin (*Calidris alpina*) [A149] - Bar-tailed Godwit (*Limosa lapponica*) [A157] - Redshank (*Tringa totanus*) [A162] - Black-headed Gull (*Chroicocephalus ridibundus*) [A179]	**Yes**, a potential source-receptor pathway exists between the proposed development site and this SPA because it is known that Light-bellied Brent geese that roost and forage within South Dublin Bay also use areas surrounding the proposed development site for foraging during winter. The site known as 'Red Arches' has been known to be a key inland foraging site as far back as 2008 (Benson, 2009), and likely earlier as the Brent geese in Dublin have been exploiting man-made habitats in the form of amenity grasslands since the 1980s (O'Briain & Healy. 1991). Goose use of areas within and close to Racecourse Park were also studied as part of the pre-planning survey work for the Racecourse Park re-development application (Scott Cawley, 2021). Baldoyle Bay SPA Conservation Objectives Supporting Document (NPWS 2012b also refer to Red Arches. Recent studies by Handy (2021) confirm the importance of the Red Arches playing pitches for foraging Light-bellied Brent geese. Recent studies by Handy (2021) confirm the importance of the Red Arches playing pitches for foraging Light-bellied Brent geese. Red Arches playing pitches are therefore recognised as an *ex-situ* feeding site for the species and the site is considered part of the network of *ex-situ* feeding

	- Roseate Tern (*Sterna dougallii*) [A192] - Common Tern (*Sterna hirundo*) [A193] - Arctic Tern (*Sterna paradisaea*) [A194] - Wetland and Waterbirds [A999]	areas used by Light-bellied Brent geese in the wider Dublin Bay area. While the proposed development under assessment is that of a brownfield site with no potential for direct habitat loss, there may be a potential for an indirect loss of foraging habitat due to disturbance. This requires further assessment. As part of this further assessment, consideration should also be given to other listed waterbird SCI species that may also feed in terrestrial habitat namely Oystercatcher, Redshank and Black-Headed Gull. There is also an indirect hydrological potential pathway between the proposed development site and South Dublin Bay and River Tolka Estuary SPA via foul water. Foul water from the proposed development will be treated at Ringsend WWTP, which ultimately discharges to the lower Liffey Estuary.
Dalkey Islands SPA (004172) *c.* 13.6km south-east	Conservation Objectives Generic Version 1.0 (NPWS, 2022d) - Roseate Tern (*Sterna dougallii*) [A192] - Common Tern (*Sterna hirundo*) [A193] - Arctic Tern (*Sterna paradisaea*) [A194]	No, there is no potential pathway between the proposed development site and Dalkey Island SPA. Terns are migratory seabirds and spends their life cycle almost exclusively at sea, apart from when nesting. There is no potential for these seabird species to be impacted by the proposed development.

5.2 Relevant Natura 2000 sites – SAC designation details

Based on the information is Table 3, there are three SAC sites considered relevant and these will be considered further during screening. The qualifying interests of these SACs are further given in Table 4, along with the current national status of their qualifying Annex I habitats and species (after NPWS, 2019).

Table 4. Qualifying interests listed for the three relevant SAC sites. National status of qualifying habitats after NPWS (2019).

Qualifying Interests	Habitat status (after NPWS, 2019)	Baldoyle Bay SAC (000199)	North Dublin Bay SAC (000206)	South Dublin Bay SAC (000210)
Mudflats and sandflats not covered by seawater at low tide [1140]	Inadequate (deteriorating trend)	x	x	x
Annual vegetation of drift lines [1210]	Inadequate (deteriorating trend)		x	x
Salicornia and other annuals colonising mud and sand [1310]	Favourable (stable trend)	x	x	x
Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]	Inadequate (deteriorating trend)	x	x	
Mediterranean salt meadows (Juncetalia maritimi) [1410]	Inadequate (deteriorating trend)	x	x	
Embryonic shifting dunes [2110]	Inadequate (stable trend)		x	x
Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120]	Inadequate (stable trend)		x	
Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	Bad (deteriorating)		x	
Humid dune slacks [2190]	Inadequate (deteriorating trend)		x	
Petalophyllum ralfsii (Petalwort) [1395]	Favourable (stable)		x	

5.3 Relevant Natura 2000 sites – SPA designation details

Waterbird Special Conservation Interests (SCIs)

Based on the information is Table 3, there are five SPA sites considered relevant and these will be considered further during screening as follows:

- Rogerstown Estuary SPA (4015)
- Malahide Estuary SPA (4025)
- Baldoyle Bay SPA (4016)
- North Bull Island SPA (4006)
- South Dublin Bay and River Tolka Estuary SPA (4024)

The waterbird Special Conservation Interests (SCIs) listed for these five SPAs, along with their current national trends (after Kennedy et al. 2022) are shown in Table 5.

Conservation Objectives

For coastal SPA sites, conservation objectives are defined for attributes relating to waterbird species populations, and for attributes related to the maintenance and protection of habitats that support them. These attributes are (1) population trend; (2) population distribution, and (3) habitat range and area. Site-specific conservation objectives for the five 'relevant' SPAs were published between 2012 and 2014 (refer to references in Section 7). The objectives are shown in Table 6.

Conservation Status

The conservation status of non-breeding waterbird species of the five relevant SPA sites in relation to Objective 1a (population trend) was provided in the respective Conservation Objectives supporting documents However, these conservation status assessments would now be considered out of date. Recently published site-specific waterbird trends are available for the SPA sites under consideration. These give an indication of the current conservation condition of the species (after Kennedy et al. 2022) (Table 7), based on the long-term trend (23-year trend). Note, short (5-year) and medium (12-year) site trends are also available and will be considered as necessary.

Note on the conservation status and trends of Light bellied Brent geese

National trends for wintering waterbirds based on I-WeBS[5] data as published by Lewis et al. (2019), show that Light-bellied Brent Goose has a long-term national trend for increase. The 10-year (2007-2017) and 5-year (2012-2017) trends however, are for decline (-10.2 and -15.5 respectively). The more recently reported long-term national population trend is for increase (+93.3, 23-year trend), however the short-term trend (5-year) is for decline (-11.2) (Kennedy et al. 2022) (Figure 11). Site-specific trends for Dublin Bay have also been produced (Kennedy et al. 2022) which show a long-term trend for increase, but again, a short-term trend for decrease (Figure 12). While the long-term trend is relevant to Conservation Objective 1 (population trend), the short-term trend for decline is important because it could signal the beginning of a longer period of declining population.

Trends can be complex to understand, and no more so than for Light-bellied Brent geese where we could use various methods to assess population size including productivity data produced by the Irish Brent Goose Research Group (IBGRG[6]). Within I-WeBS, nationally, it appears that the wintering population underwent a sustained increase in population size up until winter 2012/13 (Kennedy et al. 2022). However, since winter 2008/09, all annual indices have been lower with the exception of winter 2012/13. While it could be argued that the trend produced by I-WeBS is reliant on counts obtained on a rising tide when some geese may be foraging terrestrially, and thus does not account for all birds, the trend based on I-WeBS data uses data that have been collected in a consistent manner over a long period of time - this trend is therefore theoretically robust. Of interest is that the final index point on Figure 11 and 12 (2019/20) is relatively high which might suggest a new increase and that the short-term trend for decline was short-lived. However, it may also reflect an unusual 'high'; perhaps a reflection of a particularly successful breeding year in 2019 which also helped stabilise the downward trend in productivity[6].

[5] Irish Wetland Bird Survey

[6] https://monitoring.wwt.org.uk/our-work/goose-swan-monitoring-programme/species-accounts/canadian-light-bellied-brent/

Assessment of site trends is further confounded by emerging knowledge that Light-bellied Brent geese of Dublin Bay may interchange with birds of Baldoyle Bay and Malahide Estuary (Handby, 2021). Of note is that the species site trends for Baldoyle Bay over short, medium and the long term are all negative, while medium and long-term trends for the species at Malahide Estuary are negative (Kennedy et al. 2022).

Overall therefore, while the long-term trend of Light-bellied Brent Goose at Dublin Bay is positive and therefore the SPA conservation objective for the species population trend (objective 1) is currently met (favourable), the current recent trend for the species is for decline and the current status of the species is therefore uncertain. Of note is that the SPA conservation objective for the species population trend (objective 1) is **not** met for Baldoyle Bay SPA (long-, medium- and short-term trends all negative) (Figure 13).

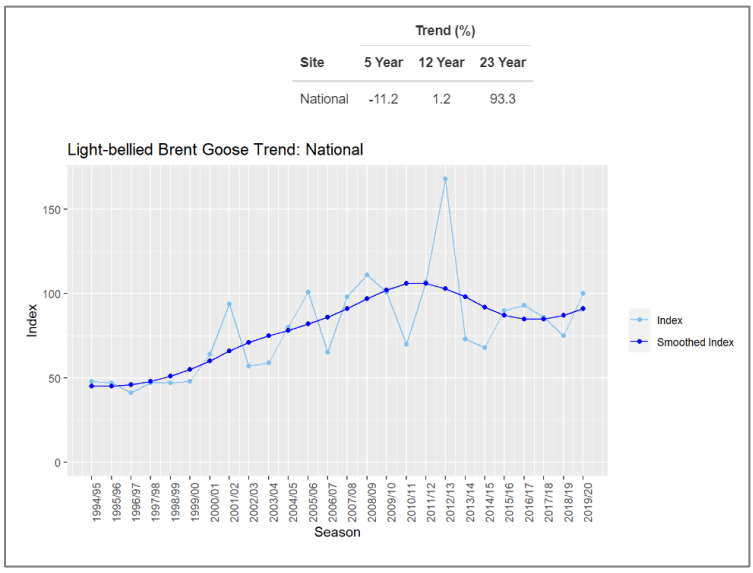

Figure 11. National population trend of Light-bellied brent Goose (Source: Kennedy et al. 2022).

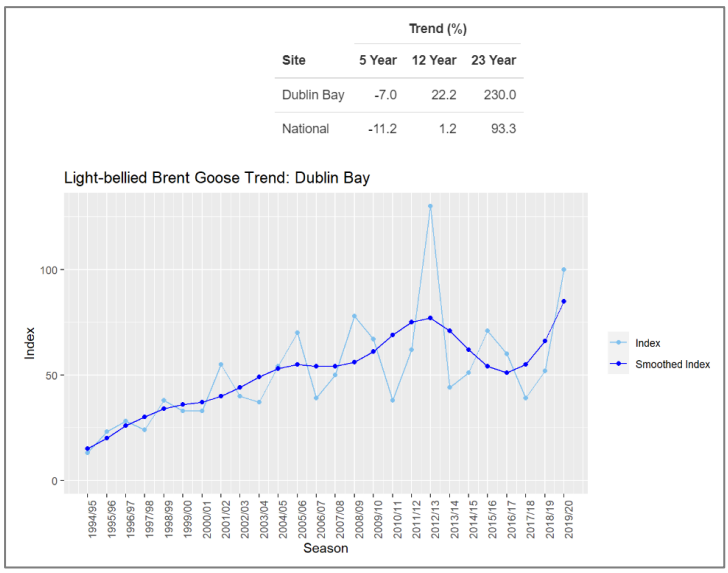

Figure 12. Site-specific trend of Light-bellied brent Goose at Dublin Bay (Source: Kennedy et al. 2022).

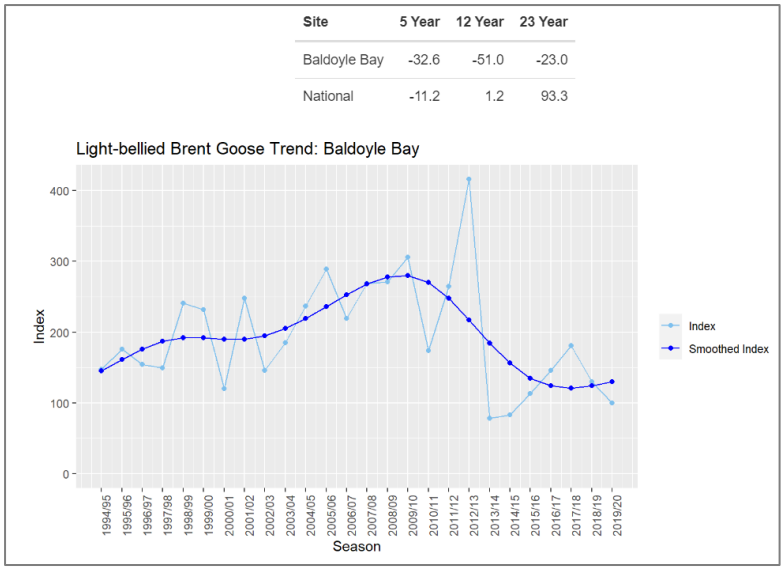

Figure 13. Site-specific trend of Light-bellied brent Goose at Baldoyle Bay (Source: Kennedy et al. 2022).

Table 5. Waterbird Special Conservation Interests (SCIs) listed for the relevant SPAs, along with their current 5-, 12- and 23-year national trends (after Kennedy et al. 2022), Annex I status and listing under Birds of Conservation Concern in Ireland (BoccI-4) (Gilbert et al. 2021). *I* denotes numbers of international importance during the SPA baseline period; N denotes numbers of National (all-Ireland) importance during the SPA baseline period*.

Species Code	Species Name	Latin Name	BoCCI-4	Annex I	SPA 4006	SPA 4015	SPA 4016	SPA 4024	SPA 4025	5-yr trend	12-yr trend	23-yr trend	Trend class (22yr)
GJ	Greylag Goose	*Anser anser*	Amber			*N*				-	-	-	-
PB	Light-bellied Brent Goose	*Branta bernicla hrota*	Amber		*I*	*I*	*I*	*I*	*I*	-11.2	1.2	93.3	Stable/Increasing
SU	Shelduck	*Tadorna tadorna*	Amber		*N*	*N*	*N*		*N*	6.3	-0.8	9.3	Stable/Increasing
T.	Teal	*Anas crecca*	Amber		*N*					1.8	5.7	19.4	Stable/Increasing
PT	Pintail	*Anas acuta*	Amber		*N*				*N*	-0.8	-6	-13.7	Intermediate decline
SV	Shoveler	*Spatula clypeata*	Red		*N*	*N*				23	-21.3	-10.8	Intermediate decline
GN	Goldeneye	*Bucephala clangula*	Red						*N*	-32.5	-39	-66.9	Large decline
RM	Red-breasted Merganser	*Mergus serrator*	Amber						*N*	-12.9	5.2	-14.7	Intermediate decline
GG	Great Crested Grebe	*Podiceps cristatus*	Amber						*N*	-39.5	-6.1	-10.8	Intermediate decline
OC	Oystercatcher	*Haematopus ostralegus*	Red		*N*	*N*		*N*	*N*	-17.5	-31.1	10.8	Stable/Increasing
RP	Ringed Plover	*Charadrius hiaticula*	Amber			*N*	*N*	*N*		-4.3	-26.8	-1.1	Intermediate decline
GP	Golden Plover	*Pluvialis apricaria*	Red	Yes	*N*		*N*		*N*	-16.9	-58.1	-54.1	Large decline
GV	Grey Plover	*Pluvialis squatarola*	Red		*N*	*N*	*N*	*N*	*N*	-30.6	-39.4	-57.8	Large decline
KN	Knot	*Calidris canutus*	Red		*N*	*N*		*N*	*N*	0	-12.2	-9.8	Intermediate decline
SS	Sanderling	*Calidris alba*	Green		*N*			*N*		-23.8	-11.1	84.6	Stable/Increasing
DN	Dunlin	*Calidris alpina*	Red		*N*	*N*		*N*	*N*	5.9	-21.2	-45.2	Moderate decline
BA	Bar-tailed Godwit	*Limosa lapponica*	Red	Yes	*I*		*N*	*N*	*N*	-32.6	-13.9	-5.1	Intermediate decline
BW	Black-tailed Godwit	*Limosa limosa islandica*	Red		*I*	*N*			*I*	22.5	25	92.3	Stable/Increasing
CU	Curlew	*Numenius arquata*	Red		*N*					-9.4	-23.7	-43.1	Moderate decline
RK	Redshank	*Tringa totanus*	Red		*N*	*N*		*N*	*N*	-14	-28.4	6.7	Stable/Increasing
TT	Turnstone	*Arenaria interpres*	Amber		*N*					-33.6	-46	-23.7	Intermediate decline
BH	Black-headed Gull	*Chroicocephalus ridibundus*	Amber		*N*			*N*	*N*	-	-	-	-
RS	Roseate Tern	*Sterna dougallii*	Amber					*N*		-	-	-	-
CN	Common Tern	*Sterna hirundo*	Amber	Yes				*N*		-	-	-	-
AE	Arctic Tern	*Sterna paradisaea*	Amber	Yes				*N*		-	-	-	-

* data from SPA Conservation Objectives Supporting documents (NPWS, 2014, 2013k, 2012b, 2014 and 2013j) for the five SPAs respectively.

Table 6. Conservation Objectives (data from SPA Conservation Objectives Supporting documents (NPWS, 2014, 2013k, 2012b, 2014 and 2013j) for the five SPAs respectively).

(a) Relevant to all five SPAs (SPA Codes 4006, 4015, 4016, 4024 and 4025)

Objective 1 *To maintain the favourable conservation condition of the waterbird Special Conservation Interest species listed for the SPA.*	*To be favourable, the long-term population trend for each waterbird Special Conservation Interest species should be stable or increasing. Waterbird populations are deemed to be unfavourable when they have declined by 25% or more, as assessed by the most recent population trend analysis.*
	To be favourable, there should be no significant decrease in the range, timing or intensity of use of areas by the waterbird species of Special Conservation Interest, other than that occurring from natural patterns of variation

(b) Objective 2 varies by area of wetland habitat of each SPA.

Objective 2 *To maintain the favourable conservation condition of the wetland habitat at the SPA as a resource for the regularly occurring migratory waterbirds that use it.*	**SPA 4006**	*To be favourable, the permanent area occupied by the wetland habitat (3,904 ha) should be stable and not significantly less than the measured area, other than that occurring from natural patterns of variation. (Note, SPA 4006 and 4024 are considered together).*
	SPA 4015	*To be favourable, the permanent area occupied by the wetland habitat (646 ha) should be stable and not significantly less than the measured area, other than that occurring from natural patterns of variation.*
	SPA 4016	*To be favourable, the permanent area occupied by the wetland habitat (263 ha) should be stable and not significantly less than the measured area, other than that occurring from natural patterns of variation.*
	SPA 4024	*To be favourable, the permanent area occupied by the wetland habitat (3,904 ha) should be stable and not significantly less than the measured area, other than that occurring from natural patterns of variation. (Note, SPA 4006 and 4024 are considered together).*
	SPA 4025	*To be favourable, the permanent area occupied by the wetland habitat (765 ha) should be stable and not significantly less than the measured area, other than that occurring from natural patterns of variation.*

Table 7. Waterbird Special Conservation Interests (SCIs) listed for the relevant SPAs, along with their current long-term (23-year) site trend where available (after Kennedy et al. 2022).

Species Name	Latin Name	North Bull Island SPA 4006	Rogerstown Estuary SPA 4015	Baldoyle Bay SPA 4016	South Dublin Bay & River Tolka Estuary SPA 4024	Malahide Estuary SPA 4025
Greylag Goose	*Anser anser*					
Light-bellied Brent Goose	*Branta bernicla hrota*	Stable/Increasing	Stable/Increasing	Intermediate decline	Stable/Increasing	Stable/Increasing
Shelduck	*Tadorna tadorna*	Stable/Increasing	Stable/Increasing	Stable/Increasing		Moderate decline
Teal	*Anas crecca*	Stable/Increasing				
Pintail	*Anas acuta*	Stable/Increasing				Large decline
Shoveler	*Spatula clypeata*	Moderate decline	Stable/Increasing			
Goldeneye	*Bucephala clangula*					Large decline
Red-breasted Merganser	*Mergus serrator*					Moderate decline
Great Crested Grebe	*Podiceps cristatus*					Stable/Increasing
Oystercatcher	*Haematopus ostralegus*	Stable/Increasing	Stable/Increasing		Stable/Increasing	Intermediate decline
Ringed Plover	*Charadrius hiaticula*		Stable/Increasing		Intermediate decline	
Golden Plover	*Pluvialis apricaria*	Stable/Increasing		Large decline		Large decline
Grey Plover	*Pluvialis squatarola*	Large decline	Large decline	Large decline	Large decline	Large decline
Knot	*Calidris canutus*	Stable/Increasing	Large decline		Stable/Increasing	Moderate decline
Sanderling	*Calidris alba*	Stable/Increasing			Stable/Increasing	
Dunlin	*Calidris alpina*	Stable/Increasing	Moderate decline		Stable/Increasing	Large decline
Bar-tailed Godwit	*Limosa lapponica*	Stable/Increasing		Large decline	Stable/Increasing	Stable/Increasing
Black-tailed Godwit	*Limosa limosa islandica*	Stable/Increasing	Stable/Increasing			Stable/Increasing
Curlew	*Numenius arquata*	Intermediate decline				
Redshank	*Tringa totanus*	Stable/Increasing	Stable/Increasing		Stable/Increasing	Moderate decline
Turnstone	*Arenaria interpres*	Stable/Increasing				
Black-headed Gull	*Chroicocephalus ridibundus*					
Roseate Tern	*Sterna dougallii*					
Common Tern	*Sterna hirundo*					
Arctic Tern	*Sterna paradisaea*					

6.0 AA Screening Assessment

6.1 Potential impact receptor pathways

The development of the site will not result in any direct impacts upon the relevant Natura 2000 sites (for example habitat loss). However, there are potential impact-receptor pathways between the proposed development site and Natura 2000 sites/marine habitats via foul water and storm water (surface water drainage). The proposed development will be connected to the public foul sewer network with treatment at Ringsend Wastewater Treatment Plant that ultimately discharges into Lower Liffey Estuary (Dublin Bay). Surface water will drain to the Mayne River which ultimately flows into Baldoyle Bay. Furthermore, given that wintering waterbirds forage on lands adjacent to the proposed site at Red Arches playing pitches, we cannot discount that the proposed development may result in disturbance to waterbirds listed for the relevant SPA sites.

6.2 Consideration of sources of cumulative impacts

Pressures upon water quality

Water quality
Transitional water quality status as shown on EPA mapping (https://gis.epa.ie/EPAMaps/) based on water quality data collected from 2018 – 2020) indicates that the waters of the River Tolka Estuary are eutrophic, while the Water Framework Directive status is 'at risk.' Transitional water quality status of the Liffey estuary is 'intermediate,' while the status of Baldoyle Bay, Malahide Estuary and Rogerstown Estuary is also intermediate, with a Water Framework Directive status of 'under review.' The water quality status of the open coastal waters relevant to North Bull Island SPA (4006), Rogerstown Estuary SPA (4015), Baldoyle Bay SPA (4016), South Dublin Bay and River Tolka Estuary SPA (4024) and Malahide Estuary SPA (4025) is 'unpolluted' (good WFD status). Overall, these data suggest that the transitional water quality of the relevant SPAs is failing to meet the required standards under the Water Framework Directive.

Water quality and Ringsend WWTP
The existing building proposed for a change of use development has an existing connection to the public sewer, with treatment at Ringsend Wastewater Treatment Plant that ultimately discharges into the Lower Liffey Estuary. The plant is documented to have been overloaded for several years and not in compliance with the EU Urban Wastewater Treatment Directive.

In April 2019, An Bord Pleanála granted permission for upgrade works required to facilitate the use of Aerobic Granular Sludge (AGS) technology, to omit the previously permitted long sea outfall tunnel and to upgrade the sludge treatment facilities at Ringsend, Dublin 4, and to provide for a Regional Biosolids Storage Facility in Newtown, Dublin 11.[7] The upgrade works at the Ringsend Wastewater Treatment Plant will provide (i) additional secondary treatment capacity with nutrient reduction (400,000 population equivalent), (ii) upgrade of the 24 existing secondary treatment tanks to provide additional capacity and nutrient reduction, which is essential to protect the nutrient-sensitive Dublin Bay area, (iii) provision of a new phosphorous recovery process; and (iv) expansion of the plant's

[7] https://www.water.ie/projects/local-projects/ringsend/

sludge treatment facilities. The overall aim is to enable future population growth and ensure the plant operates to the highest possible environmental standards[5].

Known pressures and threats to waterbirds of Dublin Bay, Baldoyle Bay, Malahide and Rogerstown Estuaries

The Conservation Objectives Supporting Documents for the relevant SPA sites under assessment highlights human disturbance in the form of walking close to the shoreline, especially with dogs, as being a major pressure upon the sites and widespread across these SPAs. Generally, activities in the intertidal zone have much greater potential to cause disturbance impacts than shoreline activities, or those activities above the intertidal zone. However, in the case of Dublin Bay and its neighbouring coastal bays, the phenomenon of inland terrestrial feeding by Light-bellied Brent Goose (and some other species) may also lead to disturbance (e.g. displacement of birds from foraging areas, habitat loss when green spaces are lost), particularly because the grassland areas used by foraging waterbirds are primarily used for human recreation/sports.

Tierney et al. (2017) discuss the following factors affecting waterbirds in Dublin Bay: disturbance (recreational/other), pressures of development/industry, fisheries/aquaculture, water quality/pollution, sea-level rise and climate change. Their review also highlights that a key concern is the effect of a combination of various pressures and threats (cumulative impacts).

Lewis et al. (2019) based on a scientific review, identified high-level pressures and threats (upon all sites/waterbird species) to be hunting, mixed source water pollution/eutrophication, climate change, energy production (e.g. windfarms) and recreational and other disturbance. Medium level pressures and threats were identified to be afforestation, bycatch, climate change, energy production (e.g. windfarms), hunting, recreational and other disturbance, shellfish harvesting and aquaculture, and water pollution. These pressures and threats were identified to affect or are likely to affect 43 species overall, comprising 25 wildfowl and allies, 16 wader species and two gull species.

Other planning applications

Adjacent development

The proposed development lies adjacent to the permitted adjacent redevelopment of Racecourse Park (Scott Cawley, 2021). The permitted park development will be located on lands between Baldoyle and Portmarnock, namely the area between Grange Road and Station Road, segmented by the Moyne Road. The park development project falls under an overall masterplan for the Racecourse Park area in Baldoyle, taking a lead from Baldoyle-Stapolin LAP in that the following key areas are addressed: the conservation and enhancement of biodiversity; the provision of accessible parks, open spaces and recreational facilities; the sustainable management of water and the maintenance of sensitive landscapes and provides for:

- 4.5km of new walking and cycling routes including a bridge over the Mayne River and the repair to the railway underpass,
- A new 6358m^2 car park catering for 96 spaces,
- Upgrading and expanding the existing playground,
- A new 2234m^2 skate park and teenage adventure playground,
- Two new 18m x 40m astroturf multi use games areas,
- A new 11906m^2 dog run,

- Tracing of circular archaeological feature through soft landscaping and removal of existing fence,
- New entrance wall to coastal greenway northern entrance,
- Development of 4 grass football pitches,
- Development of a 1224m^2 bowls green,
- Creation of 3no. attenuation ponds,
- Extension of existing reedbed south of Mayne River and creation of new brackish grassland north of the river,
- Provision of public lighting along key walking and cycling routes; and
- All landscaping works in the park.

The Natura Impact Assessment for this project was completed in 2021 (Scott Cawley Ltd 2021). Following assessment and the incorporation of mitigation measures, this document concluded that '*the proposed development will not adversely affect (either directly or indirectly) the integrity of any European site, either alone or in-combination with other plans or projects*.'

Other developments

A search was made of the Fingal County Council planning enquiry system and online mapping viewer[8] for other planning applications in the Baldoyle area within the past 12 months (December 2021 – December 2022). This resulted in 31 applications including of note:

LRD0007/S3 - A Large-scale Residential Development (LRD) for lands at Baldoyle (formerly known as The Coast), Dublin 13. The site is bounded to the north by undeveloped lands, to the east by residential development of Red Arches Drive, to the south by residential development of Red Arches Road and to the west by undeveloped land, with the Dublin-Belfast railway line further beyond. This is an amendment application for a previously permitted development. An NIS was submitted and included mitigation to conclude no adverse impacts on any European sites.

Overall, in terms of current active applications, there are no issues of concern in terms of the potential for cumulative (in-combination) impacts upon a Natura 2000 site.

Other plans

Fingal County Development Plan 2017 – 2023 – acknowledges that wastewater from the south of the county including Baldoyle discharges to the Regional Waste Water Treatment Plant at Ringsend, which is operating above capacity. It will be necessary to upgrade and expand the treatment plant to its maximum capacity which is estimated to be 2.1 million PE (subject to obtaining relevant permits). The plan contains no other issues of concern with regards cumulative impacts.

Fingal County Development Plan 2023 – 2029 – the proposed site is zoned for amenity use (objective: protect and enhance high amenity areas). The plan contains no issues of concern with regards cumulative impacts.

Baldoyle Stapolin Local Area Plan 2013 – highlights the proposed site (change of use development) as a site for the 'provision of changing facilities for clubs and teams using the pitches in Racecourse Park, and meeting space for community use.' The plan also highlights key terrestrial foraging areas for geese (Figure 4.a.1 Landscape Masterplan).

[8] https://planning.agileapplications.ie/fingal/search-applications/results?criteria=%7B%22location%22:%22baldoyle%22%7D&page=1

The plan's Green Infrastructure Strategy will '*seek to maintain habitats and species within Baldoyle Bay SPA and SAC at favourable conservation condition and ensure the ecological integrity of Baldoyle Bay. It will seek to develop Racecourse Park within the Baldoyle-Stapolin LAP lands and the open space areas within the Portmarnock LAP lands to the north, as Ecological Buffer Zones, which will help protect the ecological integrity of the neighbouring nationally and internationally designated sites by providing suitable habitat for key species such as birds while minimising the impacts of adjacent residential land uses'*.

6.3 Screening Assessment

Project Details	
Name of project	Proposed new Baldoyle Community/Sports Centre on a site of approximately 0.575 ha at former 'Coast' Estate Marketing Suite Buildings/Structures located along Red Arches Road, The Coast, Baldoyle Racecourse Park, Stapolin, Baldoyle, Dublin 13.
Natura 2000 sites within potential impact zone	Based on assessment, there are eight Natura 2000 sites considered relevant as follows: • Baldoyle Bay SAC (00199) • North Dublin Bay SAC (00206) • South Dublin Bay SAC (00210) • North Bull Island SPA (4006) • Rogerstown Estuary SPA (4015) • Baldoyle Bay SPA (4016) • South Dublin Bay and River Tolka Estuary SPA (4024) • Malahide Estuary SPA (4025)
Qualifying features of Natura 2000 sites	Please refer to Section 5.2 of this report.
Distance of project from Natura 2000 sites	• Baldoyle Bay SAC (00199) – c.430m. • North Dublin Bay SAC (00206) – c.1.5km • South Dublin Bay SAC (00210) – c.7km • North Bull Island SPA (4006) – c.1.1km • Rogerstown Estuary SPA (4015) – 10.3km • Baldoyle Bay SPA (4016) – c.500m • South Dublin Bay and River Tolka Estuary SPA (4024) – c.7.2km • Malahide Estuary SPA (4025) – c. 4.5km
Is the project directly connected with or necessary to the management of the sites?	No
Are there other projects that together with the project being assessed could affect the sites?	Please refer to the preceding section of this report.
Brief description of project	*Proposed new Baldoyle Community/Sports Centre on a site of approximately 0.575 ha at former 'Coast' Estate Marketing Suite Buildings/Structures located along Red Arches Road, The Coast, Baldoyle Racecourse Park, Stapolin, Baldoyle, Dublin 13, comprising of the demolition and removal of existing redundant single storey former 'Coast' Estate Marketing Suite Building and single storey Changing Rooms/Storage Shed with all associated structures (all totalling 410 sq m Gross Floor Space), and the construction of the Community/Sports Centre Building with ancillary infrastructure and associated site*

	development works (all totalling 1,320 sq m Gross Floor Space and ranging in height equivalent from 1 to 2 storeys).

Describe the individual elements of the project (either alone or in combination with other projects) likely to give rise to impacts on a Natura 2000 site):

- Wastewater discharges (via Ringsend WWTP).
- Surface water discharges (to Baldoyle Bay via the Mayne River).
- Disturbance to waterbirds listed for Baldoyle Bay SPA (4016).
- Disturbance to waterbirds listed for North Bull Island SPA (4006), Rogerstown Estuary SPA (4015), Baldoyle Bay SPA (4016), South Dublin Bay and River Tolka Estuary SPA (4024) and Malahide Estuary SPA (4025) in terms of use of *ex situ* sites.

Describe any likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans or projects) on Natura 2000 sites by virtue of:

(a) Size and scale; (b) Land-take; (c) Distance from Natura 2000 Site or key features of the Site; (d) Resource requirements; (e) Emissions; (f) Excavation requirements; (g) Transportation requirements; (h) Duration of construction, operation etc.; and (i) Other.

(a) Size and scale

The proposed site has an area of 0.575ha

(b) Land take

The project will not result in any direct habitat loss from within any Natura 2000 site. Potential impacts are indirect only.

(c) Distance to Natura 2000 sites

Baldoyle Bay SAC (00199) – c.430m.
North Dublin Bay SAC (00206) – c.1.5km
South Dublin Bay SAC (00210) – c.7km
North Bull Island SPA (4006) – c.1.1km
Rogerstown Estuary SPA (4015) – 10.3km
Baldoyle Bay SPA (4016) – c.500m
South Dublin Bay and River Tolka Estuary SPA (4024) – c.7.2km
Malahide Estuary SPA (4025) – c. 4.5km.

(d) Resource requirements

There is an existing watermain within the site and there is an existing connection to the building proposed for change of use (no change to existing/baseline conditions).

(e) Emissions

Foul water - wastewater discharges (via Ringsend WWTP)

The proposed site and the existing building to be re-developed are served by an existing 100mm diameter foul drain which outfalls to the west of the site to a larger 225mm diameter foul sewer network. This existing foul drain and outfall will be used to serve the new development. There will be some modifications to the drainage lines within the site boundary to cater for the new pop-up locations. A pre-connection enquiry made to Irish Water returned an outcome of 'feasible without infrastructure upgrade' (refer to Appendix D of ROD, 2023a). Ringsend WWTP has a plant capacity PE of 1640000, and the treatment type is Secondary. The most recently available annual environmental report (AER) for the WWTP (IW, 2020) shows that the plant was non-compliant in terms of Emission Limit Values (ELVs) for BOD (Biological Oxygen Demand), COD (chemical oxygen demand), Total Suspended Solids (TSS), Total Phosphorus and Total Nitrogen/*E. coli*. The annual mean hydraulic loading was less than the peak Treatment Plant Capacity and the annual maximum hydraulic loading was less than the peak Treatment Plant Capacity (IW, 2020). The significance of the 2020 results is provided below (from IW, 2020):

Significance of Results:

- The Ringsend WWTP was non-compliant with the ELV's set in the wastewater discharge licence as detailed in Section 2.1.2.
- The primary discharge from the wastewater treatment plant does have an observable negative impact on the water quality in the near field of the discharge and in the Liffey and Tolka Estuaries.
- The primary discharge from the wastewater treatment plant does not have an observable negative impact on the Water Framework Directive status in the Liffey Estuary. The DIN limit for Dublin Bay has been exceeded on occasion at 4 locations in 2020.
- Other potential causes of deterioration in water quality relevant to this area are upstream riverine pollutants, combined sewer overflows, exfiltration from sewers and misconnections to surface water sewers in the large urban agglomeration.

The Liffey Estuary from Islandbridge Weir to the Poolbeg Lighthouse including the River Tolka Basin and the South Bull Lagoon is designated as a "*sensitive area*" by Part 2, Schedule 3, of the Urban Wastewater Regulations, SI 254 of 2001. S.I. .No. 272 of 2009 (as amended) / S.I. No. 77 of 2019, set physico-chemical standards for High and Good status in transitional and coastal water bodies to be complied with outside the allocated mixing zone of a licensed discharge.

The 2020 annual environmental report (AER) goes on to summarise the status of improvements made to address the non-compliance issues. These include:

(f) Provision of additional secondary treatment facility capacity with nutrient reduction (400,000 population equivalent),
(g) Upgrade of the 24 existing secondary treatment tanks to provide additional capacity and nutrient reduction,
(h) Provision of a new phosphorous recovery process,
(i) Expansion of the plant's sludge treatment facilities.

While some upgrade works have commenced, and some are complete, the final (4th) contracts are scheduled to commence in mid 2023 and will bring the plant capacity to 2.4m PE in 2025. IW (2020) state however, that an interim stage in the project is to bring the plant into capability to produce a compliant effluent, based on a load of 2.1m PE, scheduled for the end of 2023.

Based on the completed and proposed upgrades to Ringsend WWTP, the proposed development assessed here (which is a re-development of an existing building and will use existing connections to the public sewer), will have minimal additions in relation to foul water, and as the non-compliances of the WWTP are to be resolved, significant impacts upon water quality as a result of the proposed re-development are considered unlikely. The impacts are likely to be neutral/imperceptible.

Surface/stormwater – construction phase

It is proposed to construct a new surface water drainage system for the building and carpark. However, this system will utilise the existing connection to the manhole at Red Arches Road which is in the charge of FCC. An Outline Construction Environmental Management Plan (OCEMP) has been prepared (ROD, 2023b). This OCEMP details the measures to be put in place to protect existing surface water drains during the construction phase. Note that these measures are not required directly to protect watercourses/Baldoyle Bay SAC (do not constitute mitigation), but rather, they are standard best practice practices for a construction site. The risk of polluting waters discharging from the site during construction is therefore considered to be very low. However, the measures set out in the OCEMP do add confidence in the conclusion that surface water run-off from the construction site will be managed adequately and will not pose a threat to the surrounding environment. Overall, therefore, no significant negative impacts are predicted to occur upon Baldoyle Bay SAC/SPA as a result of surface/stormwater discharges during the construction phase of the proposed development.

Surface/stormwater – operation phase

It is proposed to construct a new surface water drainage system for the building and carpark. However, this system will utilise the existing connection to the manhole at Red Arches Road which is in the charge of FCC. The site will be attenuated for the 1-in-100 year + 20% climate change event. It has been calculated that 62.49m^3 of combined on site storage will allow the site to achieve a greenfield discharge rate of 2 L/s without experiencing any flooding on site within the 1 in 100 year + 20% climate change. This is being incorporated through a mixture of underground storage in the form of pipework and permeable paving or grasscrete, and above ground attenuation in the form of grassed rain gardens. A petrol interceptor will be provided as an additional means of reducing the discharge of oils and spillages from the site. As the proposed project is essentially a change of use of the existing site (re-development of an existing building), there will be no material change to the existing surface water management (Neutral/Imperceptible impact). The incorporation of SuDS techniques and a hydrocarbon interceptor are positive improvements. Overall, no significant impacts as a result of surface water management are anticipated to occur upon Baldoyle Bay SAC/SPA.

Noise during the construction phase (disturbance to waterbirds using *ex situ* foraging site)

Elements of the construction phase of the proposed development assessed here that are likely to generate noise disturbance (e.g. external works) or cause visual disturbance, are programmed for the period May - August (inclusive) and will thus not result in construction related disturbance to foraging Light-bellied Brent geese (which are winter visitors). Adherence to this timeframe is the basis on which the potential for noise disturbance can be screened out.

Wintering waterbirds that may utilise Red Arches playing pitches for foraging during winter will therefore not be disturbed by construction activities. Some wintering waterbirds listed for coastal SPA sites also occur during summer months (e.g. first year birds, failed breeders that have returned on migration early), however the numbers of waterbirds likely to use terrestrial and inland foraging resources at that time are very small (likely none), and disturbance related impacts are therefore predicted to be imperceptible (non significant). Note that the potential for disturbance during the operation phase is assessed below.

(j) Excavation requirements

Minimal excavation work will be required and the potential for negative impacts is addressed by the OCEMP (ROD, 2023b).

(k) Transportation requirements

There will be some increase in construction-related traffic in the locality during the re-development of the existing brownfield site. As construction activities associated with the proposed development assessed here will be restricted to the period May - August (inclusive) predicted impacts in terms of disturbance to waterbirds at an *ex situ* site are considered to be imperceptible.

(l) Duration of operation

The development will be a permanent construction.

Describe any likely changes to the site as a result of: (a) Reduction of habitat area, (b) disturbance to key species, habitat or species fragmentation, (c) reduction in species density, (d) changes in key indicators of conservation value or climate change.

Potential impacts of noise emissions upon Baldoyle Bay SPA – construction and operation phase

(1) Risks

In areas such as coastal SPA sites where human use and high biodiversity value coincide, acceptable levels of human disturbance need to be determined and managed (e.g. Kirby et al. 2004; Gill 2007). Disturbance may cause displacement of waterbirds, both within and between sites, influence feeding and resting behaviour, result in increased daily and seasonal energy expenditure overall, and increase the chance of predation. Overall, this may affect the condition and fitness of migratory species, where fitness is defined as the ability of an individual to survive, and breed and produce viable offspring, hence securing future generations of the species. Survival is a key demographic parameter therefore in the 'success' of waterbirds at their wintering sites. Disturbance is an especially pertinent issue given that the most recently published and updated waterbird population estimates and trends for Ireland show that Ireland has lost 40% of its wintering waterbirds in the past 20 years; with the majority of wading bird species in decline over both the short-and long-term periods (Burke et al. 2018, Lewis et al. 2019). Waterbirds are clearly under pressure from a range of factors, of which disturbance is just one.

(2) Potential impacts of the proposed project – construction phase

Noise levels at construction sites vary greatly. The table below gives an indication of average noise levels of some of the 'nosiest' standard construction equipment. It is clear therefore that construction noise levels can exceed levels of 100dB.

Average noise levels of standard construction equipment at point of operator (Source: IHSFNA, 2019).

Equipment	Average (dBA)	Range (dBA)
Bulldozer	96	89-103
Truck	96	89-103
Crane	100	97-102
Pneumatic rock breaker	106	94-111
Front end loader	88	85-91
Paver	101	100-102

Generic waterbird responses to disturbance from a range of activities including construction work have been collated and summarised over time. Cutts et al (2013) summarised waterbird responses to disturbance from a range of activities in the table to the right -

Personnel and plant on mudflat:	High (and should be restricted at all times)
Third party on mudflat:	High (but difficult to restrict)
Personnel and plant on seaward toe and face:	High to Moderate
Intermittent plant and personnel on crest:	High to Moderate
Third party on bank:	High to Moderate
Irregular piling noise (above 70db):	High to Moderate
Long-term plant and personnel on crest:	Moderate
Regular piling noise (above 70db):	Moderate
Irregular noise (50db - 70db):	Moderate
Regular noise (50db - 70db):	Moderate to Low
Occasional movement of crane:	Moderate to Low
Noise below 50db:	Low
Long-term plant only on crest:	Low
Activity behind flood bank (inland):	Low

These data are in agreement with other published material which suggest that activities within the intertidal zone, or in close proximity/sight of intertidal zone, create the greatest amount of disturbance. Indeed, repeatedly across studies (e.g. Phalan & Nairn, 2007; Adcock et al., 2018; Lewis, 2019), dogs on and off lead, and people walking (close to, or within intertidal areas) are found to elicit the highest levels of response behaviour from waterbirds, and consistent recreational use of shorelines particularly by dogs, can have a negative impact on waterbird numbers (e.g. Stigner et al. 2016).

Cutts et al. (2013) suggest that construction works with regular levels of noise of 50bd to 70db result in 'moderate' responses from waterbirds, in that the waterbirds become habituated to the levels. A 70dB threshold level is used, with noise levels above potentially leading to waterbirds moving away from the source of noise (note however that this is generic and may differ greatly between different noise stimuli and between different waterbird species). Given that noise levels on a construction site can exceed 70dB, the pertinent question therefore is how much of a disturbance such a noise level may create over distance. The proposed site and area where the Community Centre will be constructed is c. 500m from Baldoyle Bay SPA. Cutts et al. (2013) created a matrix of the observed responses of waterbirds to various noise stimuli, and from there derived an overview table of standard distance decay rates for noise. It is therefore possible to calculate the likely disturbance effect for a noise level of 100dB (100dB used as an average value for assessment). At 500m, a 100dB noise level is predicted to have decreased to less than 46dB and elicit a **low response** from waterbirds (e.g. negligible response).

Metres from Source	dB(A)										
0.67	120	110	100	95	90	85	80	75	70	65	60
1.33	114	104	94	89	84	79	74	69	64	59	54
2.67	108	98	88	83	78	73	68	63	58	53	48
5.33	102	92	82	77	72	67	62	57	52	47	42
10.67	96	86	76	71	66	61	56	51	46	41	36
20.67	90	80	70	65	60	55	50	45	40	35	30
42.67	84	74	64	59	54	49	44	39	34	29	24
85.33	78	68	58	53	48	43	38	33	28	23	
170.67	72	62	52	47	42	37	32	27	22		
341.33	66	56	46	41	36	31	26	21			
682.66	60	50	40	35	30	25	20				
1365.32	54	44	34	49	24						

Given that construction activities associated with the proposed development assessed here that are likely to generate noise disturbance (e.g. external works) or cause visual disturbance are programmed for the period May - August (inclusive), the main noise-generating construction activities will take place when wintering waterbirds are not present at Baldoyle Bay SPA. For waterbirds that are present during the summer months (e.g. 1st year birds, failed breeders that have migrated back early), based on the assessment above, the potential for construction related noise to disturb them is negligible.

(3) Potential for disturbance related impacts to waterbirds utilising the Red Arches Playing Pitches – operational phase

Based on the data and information collated and summarised in this report, it is clear that the Red Arches playing pitches are of great importance to Light-bellied Brent geese. The area's attractiveness for geese may be related to the short distance to the North Bull Island roost site, but also proximity to the coastline/marine waters, short distance to Seagrange Park, another foraging site, as well as the openness of the area, offering the geese panoramic views of their habitat, allowing for early detection of predators. Work by Handby (2021) also confirms interchange between the geese of North Bull Island, South Dublin Bay, Baldoyle Bay as well as Malahide Estuary and possibly Rogerstown Estuary. The near coast setting of Red Arches amongst the backdrop of Racecourse Park and its other terrestrial foraging areas, means that Red Arches may well be utilised by geese from any of the aforementioned SPA sites. In addition, the park is seen to act as an ecological buffer zone between the residential development to the west and Baldoyle Bay SPA to the east (Scott Cawley, 2013).

Maintenance of the Red Arches playing pitches as a foraging habitat for geese (and other waterbirds) is therefore of importance. This has been recognised for many years, with due cognisance given to the management of grassland as a foraging habitat within lands of the Baldoyle-Stapolin local area (Scott Cawley, 2013). This is a positive given

that the wider inland terrestrial foraging network in the Dublin area is under pressure due to development, loss of habitat suitability due to lack of management, increased use of AstroTurf etc.

Bearing all this is mind, it would appear that there will be no change to the potential use of the Red Arches playing pitches by geese (or other waterbirds) as a result of the re-development of the existing building into a Community Centre. The playing pitches are, and have always been, in use for sports throughout the time that geese have been recorded using them for foraging. Indeed, the management of the pitches for playing sports (i.e. mowing and maintenance of a short sward) is paramount to the attractiveness of the habitat to foraging geese. For instance, the most common habitat type used by Light-bellied Brent geese in a GPS tracking study undertaken by Handby (2021) was found to be sports pitches (golf courses and playing fields). The acknowledgement of the importance of the playing pitches for geese, their continued management, and the continued management of lands within the wider Racecourse Park for geese, and wildlife in general, therefore suggest that there will be no change due to the replacement of an existing building with a new Community Centre, and re-landscaping of the surrounding garden area.

What is also important to consider is that while the playing pitches are in active use, there will remain periods of time when they are unused by sports activities and are therefore available to the geese. The geese utilise a network of sites across the Dublin area and this use is likely to vary based on the levels of disturbance (when green areas are in active use) and the habitat suitability at any point in time during winter which is related to how much grazing has taken place, how much depletion of the foraging resource has taken place, and how much re-growth of grass occurs during winter. The network as a whole is therefore important.

The effects of disturbance upon wintering waterbirds and the significance of disturbance events can be hard to predict. For instance, behavioural responses to disturbance can vary from subtle declines in intake rates to more serious changes such as avoidance of entire areas or sites (Mitchell et al. 1989). Of importance during impact assessment is the determination of the magnitude (significance) of any disturbance impact. However, this is very often difficult to predict. For instance, the fact that a bird flies away from a disturbance does not automatically imply a serious negative effect if the bird has alternative habitat to go to, of similar quality, or for example, if birds return to the former area once the disturbance event has finished. In areas subject to heavy or on-going disturbance waterbirds may be disturbed so frequently that their displacement is equivalent to habitat loss. This is unlikely to happen as a result of the construction and operation of the Community Centre. Rather, we would predict that the geese (and other waterbirds) would continue to use the Red Arches Playing pitches as before. The rationale for this prediction is detailed below.

Firstly, it is worthy of note that Light-bellied Brent geese and some other waterbird species such as Oystercatcher have become habituated to some degree to human presence within their inland foraging areas. Indeed, the prevalence and success of inland foraging by Light-bellied Brent geese and their apparent lack of reaction to some human presence/activities is likely to have at least partially led to their long-term population increase, at a time when so many other waterbirds are in decline. Conversely, it may be the increase in population size that may have led to the geese adapting a novel foraging strategy in recent decades that enable them to forage in perceived high-risk, terrestrial habitats, while minimising the risk of predation through increasing foraging rates and group vigilance, with individuals in certain flock positions bearing more of the vigilance load (Inger et al. 2006).

Clearly while the geese will have their limits of tolerance and can be disturbed by a number of factors (e.g. Owens, 1977, Stock, 1991, Riddlington et al. 1996) their perceived level of risk to some human activities is low. Inland foraging is not confined to Dublin Bay, at Dungarvan Harbour in Co. Waterford for instance, the geese (and species such as Oystercatcher and Redshank) routinely feed in grassland areas in front of houses/flats as well as within an active Pitch and Putt course. Here, as in Dublin Bay, the short distance to water (i.e. a close route to safety from perceived predators) is a likely contributing factor (L.J. Lewis *pers obs*). This habituation is not to say however, that the geese do not also require suitable foraging habitat in quiet, undisturbed areas. To this end, mitigation was provided in the NIS for the permitted re-development of Racecourse Park as follows:

- The proposed car park in the northernmost part of the existing playing pitches at Red Arches, has been designed so as to lead visitors from the car park to a designated entrance to the playing pitches, located to the south-west of the proposed car park. This is to ensure that people use a defined entrance as opposed to simply running onto the pitches from any location in the car park. Furthermore, screen planting and fencing has been provided around the perimeter of the car park to ensure that loose dogs cannot simply run onto the pitches from the car park.

- The playing pitches and potentially the other areas in the wider park which are to be managed for geese will be zoned as "dog-free" for the winter bird season (September – April) and signs will be erected to convey this message to the public. These signs will also act as a means of public education to describe how disturbance such as loose dogs can impact geese.
- It will be park policy that all dogs must be kept on a lead at all times while in the park, with the exception of the dog park. This will be implemented by a by-law and enforced by Fingal County Council Park Rangers who will monitor the park.

Conclusion

Importantly, even though the Red Arches playing pitches are in use, the critical factor is that the geese (and other waterbirds) can still utilise the habitat and foraging resource at times when the pitches are not in use by people. The foraging resource may even be used at night when conditions are suitable (e.g a full moon). So the continued utilisation of the foraging resource means that even at times when the playing pitches are in use, this does not constitute habitat loss, because the foraging resource can be still utilised when the pitches are not in use. This fact, together with the acknowledgement of the importance of the area for terrestrially foraging geese and other waterbirds, management of the Racecourse Park with foraging geese in mind, and the continued better education and cognisance of the public towards disturbance and waterbirds, should all result in the Red Arches playing pitches remaining an important and key inland foraging site for geese and other waterbirds. Therefore, significant negative impacts to the Light-bellied Brent Goose and other waterbird populations as a result of the operation of the Community Centre are considered unlikely.

Describe any likely impacts on the Natura 2000 site as a whole in terms of: (a) Interference with the key relationships that define the structure of the site, and (b) Interference with key relationship that define the function of the site.

As above.

6.4 AA screening conclusions

Following the examination of relevant information, including in particular, the nature and design of the proposed project, this assessment concludes that significant impacts upon the qualifying interest species and the conservation objectives of any of the relevant Natura 2000 sites are highly unlikely (high degree of confidence).

7.0 References and information sources

Adcock, T., Lewis, L. J. & O'Brien, C. (2018) *An assessment of the effects of Kitesurfing and other activities on the waterbirds using Dollymount Strand. Unpublished* report commissioned by Dublin City Council and prepared by BirdWatch Ireland.

Benson, L. (2009) Use of inland feeding sites by Light-bellied Brent geese in Dublin 2008 – 2009: a new conservation concern. *Irish Birds* 8, 563-570.

Burke, B., Lewis, L. J., Fitzgerald, N., Frost, T., Austin, G. & Tierney, T. D. (2018) Estimates of waterbird numbers wintering in Ireland, 2011/12 – 2015/16. *Irish Birds* 11, 1-12.

Burke, B., Fitzgerald, N., Kelly, S. & Lewis, L.J. (2022) *Greylag and Pink-footed geese in Ireland 2017/18-19/20*. Irish Wetland Bird Survey (I-WeBS) Report. BirdWatch Ireland, Wicklow.

CIEEM (2016) *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal, 2nd edition.* Chartered Institute of Ecology and Environmental Management, Winchester.

Cutts, N.D. & Hemingway K.L.H. (2012) Bird disturbance from flood and coastal risk management construction activities. Report to Cascade Consulting. Institute of Estuarine & Coastal Studies, University of Hull.

Cutts, N., Heminway, K. & Spencer, J. (2013) *Waterbird disturbance mitigation toolkit. Informing estuarine planning and construction projects.* University of Hull. UK.

Cutts, N.D., Phelps, A., & Burdon, D. (2009) Construction and waterfowl: Defining sensitivity, response, impacts and guidance. Report to Humber INCA. Institute of Estuarine & Coastal Studies, University of Hull.

DoEHLG, (2009) *Guidance Document 'Appropriate Assessment of plans and projects in Ireland: Guidance for planning authorities.* Department of the Environment, Heritage & Local Government. 2009.

EPA (2002) *Guidelines on the information to be contained in Environmental Impact Statements.* Environmental Protection Agency, Wexford.

EPA (2003) *Advice Notes on Current Practice (in the preparation of Environmental Impact Statements*). Environmental Protection Agency, Wexford.

EPA (2012) *Environmental Licensing Programme. Memorandum.* June 2012. Environmental Protection Agency, Wexford.

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

EPA (2022) Summary report: water quality in Ireland 2016-2021.

European Commission (2007) *Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC*.

European Commission (2018) *Managing Natura 2000 sites: the provisions of Article 6 of the 'Habitats Directive' 92/43/CEE*. (Commission Notice C (2018) 7621 final Brussels 21.11.2018),

European Commission (2021) Assessment of plans and projects significantly in relation to Natura 2000 sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC. EU Commission, Brussels.

Fingal County Council (2022) Draft Development Plan 2023-2029.

Fingal County Council (2022b) Draft Biodiversity Action Plan 2022-2030.

Fitzgerald, N., Burke, B. & Lewis, L.J. (2020) *Irish Wetland Bird Survey (I-WeBS): Results of waterbird monitoring in Ireland in 2016/17 and 2017/18.* BirdWatch Ireland, Wicklow.

Fossitt, J.A. (2000) *A Guide to the Habitats of Ireland*. The Heritage Council, Ireland.

Gilbert, G., Stanbury, A. & Lewis, L.J. (2021) Birds of conservation concern in Ireland 4 2020 – 2026. *Irish Birds* 43, 1-22.

Gill, J. A. (2007) Approaches to measuring the effects of human disturbance on birds. *Ibis* 149, 9–14.

Handby, T. (2021) *Understanding patterns of urban habitat use in overwintering light-bellied Brent geese in Dublin, Ireland.* Project Report. November 2021.

Henchion Reuter Architects (2022) New Community Centre at Racecourse Park, Baldoyle, Dublin 13. Design Report.

IEA (1995) *Guidelines for Baseline Ecological Assessment*. E & FN Spon, UK. 142 pp.

IEEM (Institute of Ecology and Environmental Management) (2006) *Guidelines for Ecological Impact Assessment in the UK*.

IHSFNA (2019) Controlling noise on construction sites.

Inger, R., Bearhop, S. Robinson, J.A. & Ruxton, G.D. (2006) Prey choice affects the trade off balance between predation and starvation in an avian herbivore. *Animal Behaviour* 71, 1335-1341.

www.lhsfna.org/LHSFNA/assets/File/bpguide%202014.pdf. Accessed 28/02/19.

Irish Water (2020) Annual Environmental Report 2020. Ringsend D0034-01.

Kennedy, J., Burke, B., Fitzgerald, N., Kelly, S.B.A., Walsh, A.J. & Lewis, L.J. (2022) Irish Wetland Bird Survey: I-WeBS National and Site Trends Report 1994/95 – 2019/20. BirdWatch Ireland Waterbird Report to the National Parks and Wildlife Service. BirdWatch Ireland, Wicklow. (*https://birdwatchireland.ie/app/uploads/2022/04/iwebs_trends_report.html*)

Kirby, J., Davidson, N., Giles, N., Owen, M. & Spray, C. (2004) *Waterbirds and wetland recreation handbook: a review of issues and management practices*. Wildfowl & Wetlands Trust.

Kirby, J. S., Stattersfield, A. J., Butchart, S. H. M., Evans, M. I., Grimmett, R. F. A., Jones, V. R., O'Sullivan, J., Tucker, G. M. & Newton, I. (2008) Key conservation issues for migratory land- and waterbird species on the world's major flyways. *Bird Conservation International* 18, 49-73.

Larkin, A. (2012) A study on Brent Goose Behaviour in Dublin: Feeding, Agonistic and Anti-Predator Behaviour in Response to Disturbances. UCD Dublin.

Lewis, L. J., Burke, B., Fitzgerald, N., Tierney, T. D. & Kelly, S. (2019) *Irish Wetland Bird Survey: Waterbird Status and Distribution 2009/10 - 2015/16. Irish Wildlife Manuals No. 106.* National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht, Ireland.

Marnell, F., Looney, D. & Lawton, C. (2019) *Ireland Red List No. 12: Terrestrial Mammals.* National Parks and Wildlife Service, Department of the Culture, Heritage and the Gaeltacht, Dublin, Ireland.

Newton, S., Lewis, L. J. & Trewby, M. (2015) *Results of a breeding survey of important cliff-nesting seabird colonies in Ireland 2015.* Report commissioned by the National Parks & Wildlife Service and prepared by BirdWatch Ireland.

NPWS (2008) *The status of EU protected habitats and species in Ireland. Conservation Status in Ireland of Habitats and Species listed in the European Council Directive on the Conservation of Habitats, Flora and Fauna 92/43/EEC.* National Parks & Wildlife Service. Department of the Environment, Heritage and Local Government 2008.

NPWS (2013a) *The status of EU protected habitats and species in Ireland. Habitats Assessments* Version 1. Unpublished report, National Parks & Wildlife Service. Department of the Environment, Heritage and Local Government, Ireland.

NPWS (2013b) *The status of EU protected habitats and species in Ireland.* Overview Volume 1. Unpublished report, National Parks & Wildlife Service. Department of the Environment, Heritage and Local Government, Ireland.

NPWS (2012) Conservation Objectives: Baldoyle Bay SAC 000199. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2012b) Baldoyle Bay SPA 4016. Conservation Objectives Supporting Document. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

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

NPWS (2013b) Conservation Objectives: North Dublin Bay SAC 000206. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2013c) Conservation Objectives: Rockabill to Dalkey Island SAC 003000. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2013d) Conservation Objectives: Lambay Island SAC 000204. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht

NPWS (2013e) Conservation Objectives: Rogerstown Estuary SAC 000208. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2013f) Conservation Objectives: South Dublin Bay SAC 000210. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2013g) Conservation Objectives: Baldoyle Bay SPA 004016. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

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

NPWS (2013i) Conservation Objectives: Rogerstown Estuary SPA 004015. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2013j) Malahide Estuary SPA 4025. Conservation Objectives Supporting Document. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2013k) Rogerstown Estuary SPA 4015. Conservation Objectives Supporting Document. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2014) North Bull Island and South Dublin Bay and River Tolka Estuary 4024. Conservation Objectives Supporting Document. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2015) Conservation Objectives: North Bull Island SPA 004006. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2015b) Conservation Objectives: South Dublin Bay and River Tolka Estuary SPA 004024. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2016) Conservation Objectives: Howth Head SAC 000202. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.

NPWS (2017) Conservation Objectives: Ireland's Eye SAC 002193. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.

NPWS (2019) The status of EU protected habitats and species in Ireland. Volume 1. Summary Overview. Unpublished NPWS Report.

NPWS (2021) *Irish Wildlife Manual 116. Checklists Protected and Threatened Species* Version 2.1 3 December 2021.xlsx

NPWS (2022) Conservation objectives for Ireland's Eye SPA [004117]. First Order Site-specific Conservation Objectives Version 1.0. Department of Housing, Local Government and Heritage

NPWS (2022b) Conservation objectives for Howth Head Coast SPA [004113]. First Order Site-specific Conservation Objectives Version 1.0. Department of Housing, Local Government and Heritage.

NPWS (2022c) Conservation objectives for Lambay Island SPA [004069]. First Order Site-specific Conservation Objectives Version 1.0. Department of Housing, Local Government and Heritage.

NPWS (2022d) Conservation objectives for Dalkey Islands SPA [004172]. First Order Site-specific Conservation Objectives Version 1.0. Department of Housing, Local Government and Heritage.

O Briain, M. (1991) Use of a *Zostera* bed in Dublin Bay by Light-bellied Brent geese 1981/82 to 1990/91. *Irish Birds* 4, 229-316.

O Briain, M. & Healy, B. (1991b) Winter distribution of Light-bellied Brent geese *Branta bernicla hrota* in Ireland. *Ardea* 79, 317 – 326

OPR (Office of the Planning Regulator) (2021) Appropriate Assessment Screening for Development Management. March 2021.

Owens, N.W. (1977) Responses of wintering Brent geese to human disturbance. *Wildfowl* 28, 5-11.

Phalan, B., & Nairn, R.G.W. (2007) Disturbance to waterbirds in south Dublin Bay. *Irish Birds* 8, 223-230.

Ratcliffe, D. A. (1977) (ed) *A Nature Conservation Review*. Cambridge University Press, Cambridge, UK.

Regini, K. (2000) Guidelines for ecological evaluation and impact assessment. *In Practice, Bulletin of the Institute of Ecology and Environmental Management* 29, 1-7.

Riddington, R., Hassall, M., Lane, S. J., Turner, P. A. & Walters, R. (1996) The impact of disturbance on the behaviour and energy budgets of Brent geese *Branta bernicla. Bird Study 43*, 269-279.

Roughan & O'Donovan (ROS) (2023a) Fingal County Council: Baldoyle Community Centre. Engineering Report for planning. January 2023.

Roughan & O'Donovan (ROS) (2023b) Fingal County Council: Baldoyle Community Centre. Outline Construction Management Plan. November 2023.

Roughan & O'Donovan (ROS) (2023c) Community Centre at Baldoyle Racecouse Park in Fingal. Site specific flood risk assessment. August 2023.

Scott Cawley (2013) *Natura Impact Report. Baldoyle Stapolin Local Area Plan. Appropriate Assessment.* June 2013.

Scott Cawley (2019) *Ecological Impact Assessment. Proposed park development project at Racecourse Park, Baldoyle, Dublin 13*. Report prepared for Fingal County Council.

Scott Cawley (2021) *Screening report and Natura Impact Statement – Information for Stage 1 Screening and Stage 2 Appropriate Assessment for a proposed development project at Racecourse Park, Baldoyle, Dublin 13*. Report for Fingal County Council.

Scott Cawley (2022) Natura Impact Report. Draft Fingal County Development Plan 2023-2029. Report for Fingal County Council.

Scott Cawley (2022b) *Wintering Bird Survey Report. Baldoyle Racecourse Park.* Prepared for Fingal County Council.

Stigner, M.G., Beyer, H.L., Klein, C.J. & Fuller, R.A. (2016) Reconciling recreational use and conservation values in a coastal protected area. *Journal of Applied Ecology* 53, 1206-1214.

Stock, M. (1991) Studies on the effects of disturbance on staging Brent geese: a progress report. *IWRB Goose Research Group Bulletin No. 1.*

Sutherland W.J (Ed.) (1996) *Ecological Census Techniques, a Handbook.* Cambridge, UK.

Tierney, N., Whelan, R., Boland, H. & Crowe, O. (2017) The Dublin Bay Birds Project. Synthesis 2013-2016. BirdWatch Ireland.

Treweek, J. (1999) *Ecological Impact Assessment*. Blackwell Science, UK.

Woods-Ballard B, Wilson, S., Udale-Clarke, H., Illman, S., Scott., Ashley, R. & Kellagher, R. (2015) The SuDS Manual. Ciria C753.

Wyse Jackson, M., FitzPatrick, Ú., Cole, E., Jebb, M., McFerran, D., Sheehy Skeffington, M. & Wright, M. (2016) Ireland Red List No. 10: Vascular Plants. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs, Dublin, Irel

Appendix 1

Ecological Impact Assessment (EcIA) process has three main steps:

1. Ecological evaluation - this step consists of evaluating each ecological resource (e.g. habitat, population, or species) within the zone of influence (area to be affected) using the criteria outlined in Table 1a (based on a geographic hierarchy of importance). Each ecological resource is given an evaluation value (ranking) as described in Table 1b.
2. Impact (Affect) prediction - based on information provided on the proposed project/development, this step aims to identify all direct and indirect impacts that may affect the ecological features in the zone of influence, and wider area. Table 1c gives impact terminology as per the EPA (2017).
3. Assessment of the magnitude of impact - impact magnitude refers to the 'size' or 'amount' of an impact/ affect (IEEM, 2006; EPA, 2017). The magnitude of an impact will depend on the nature and sensitivity of the ecological features and will be influenced by intensity, duration (temporary/permanent), timing, frequency and reversibility of the potential impact (CIEEM, 2016). Levels of impact magnitude are given in Table 1d. Magnitude terminology is based on EPA (2003) while the rationale for assigning level of significant impact follows CIEEM (2016). Importantly, this step aims to identify the impacts which may be significant upon '*important ecological features'* (CIEEM, 2016).

Table 1a. Criteria for ecological evaluation

Evaluation criteria	**Definitions and Notes**
Site designations	Designated areas for conservation are areas that are designated under national and/or European laws in order to conserve habitats and species of national or international conservation importance. These include: • Natural Heritage Areas (NHA): a national designation given legal status by the Wildlife Amendment (2000) Act. • Special Areas of Conservation (SAC): areas considered of European and national importance whose legal basis is the EU Habitats Directive (92/43/EEC). • Special Protection Areas (SPA): sites of conservation importance for birds whose legal basis is the EU Birds Directive (2009/147/EC). • Wildfowl Sanctuary: designated under the 1976 Wildlife Act. • Ramsar Site: European designation based on the Ramsar Convention, 1984.
Species designations/criteria	Certain legislation refers directly to species/populations (e.g. annexed species): • Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora.

	• Directive 2009/147/EC (Birds Directive) on the conservation of wild birds (the codified version of Council Directive 79/409/EEC as amended). • Bern Convention on the Conservation of European Wildlife and Natural Habitats. • The Wildlife Act (1976) and the Wildlife (Amendment) Act (2000). • Birds of Conservation Concern in Ireland (Gilbert et al. 2021). • Red Data Books (e.g. Wyse-Jackson et al. 2016) • Flora (Protection) Order, 2015.
Size	Includes both size of habitats (area) and population size of individual species and is intrinsically linked to other criteria such as rarity and fragility (below). Habitats: considers minimum viable size of habitats, habitat heterogeneity, species/area relationships, home-range size. Populations: considers concept of minimum viable population size (population viability), national and local population trends, and extinction risk.
Diversity / Biodiversity	At a minimum species richness (number of species). Biodiversity defined as 'the variability among living organisms from all sources including, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part (Convention on Biological Diversity, 1993). Must be considered in terms of the habitat type - some habitats have low species diversity by nature. Keystone species deserve special attention – defined as a species whose removal would induce significant changes within the food web (Begon *et al.,* 1996).
Rarity	Applies to habitats and to species. The degree to which a habitat or community approximates a natural state. The degree to which the site is a good example of the habitat types. National, county, local scales e.g. within 10-km^2 squares.
Naturalness	The degree of modification by human intervention. Habitats that are least modified are generally regarded more highly (Treweek, 1999). Also considers the extent to which the habitat is free of alien species.
Representativeness/ Typicalness	How well the area represents habitats or vegetation types on a wider scale (Treweek, 1999); 'degree of representivity of the natural habitat type on the area' (Council Directive 92/43/EEC; Habitats Directive).
Fragility	The degree of sensitivity of habitats, communities and species to environmental change.
Stability/Resistance/Resilience	Habitats and species. Stability refers to the ability of an ecosystem to maintain some form of equilibrium in the presence of a disturbance. Resilience is defined as the ability and speed with which a community returns to its former state following a disturbance. Resistance is defined as the ability of a community to avoid displacement by a disturbance (Begon *et al.,* 1996).
Other criteria include:	
Recorded history (scientific value), Potential value, Educational value, Amenity value.	

Table 1b. Ecological Evaluation

Ecological value	Examples
A International	Sites designated as Special Protection Areas (SPA), Special Areas of Conservation (SAC), Ramsar Sites. Sites meeting criteria for international designation.
B National	Sites designated as Natural Heritage Areas (NHA) or sites qualifying for designation. Undesignated sites containing good examples of Annex I habitats. Undesignated sites containing significant numbers of resident or regularly occurring populations of Annex II species under the EU Habitats Directive or Annex I species under the EU Birds Directive or species protected under the Wildlife (Amendment) Act 2000. Sites supporting viable populations of Red Data Book species (nationally rare species).
C Regional	Undesignated sites that are prime examples of the habitat (natural or semi-natural) type, exhibit high biodiversity or support important communities/assemblages of species within the region. Sites exhibiting habitats that are scarce within the region. Sites that support nationally scarce plant species (recorded from less than 65 10-km^2 squares, unless they are locally abundant). Sites that hold regionally scarce vertebrate species.
D High Local	Sites that are prime examples of the habitat type, exhibit high biodiversity or important communities/assemblages of species within the local area. Habitats that are considered important in a local context e.g. semi-natural habitats within an urban setting, hedgerows and treelines that serve as important ecological corridors within an otherwise modified landscapes. Sites exhibiting habitats/species that are generally scarce within the local area.
E Moderate Local	Sites that exhibit good quality semi-natural habitats. Hedgerows and treelines.
F Low Local	Artificial or modified habitats considered of low value for wildlife.

Adapted from CIEEM, 2016; IEEM, 2005; NRA, 2004; Regini, 2000.

Table 1c. Description of effects as per the EPA (2017):

Type of impact	Description
Positive Impact	A change which improves the quality of the environment.
Negative Impact	A change which reduces the quality of the environment.
Neutral Impact	A change that falls within typical bounds of variation within the study area.
Indirect Effects/ Secondary Effects	Impacts not directly associated with the project, often produced away from the project site or because of a complex pathway.
Cumulative Effects	The addition of many small impacts to create one larger, more significant, impact.
Do-Nothing Effects	The environment as it would be in the future if no development was carried out.
Worst-Case Effects	Impacts arising from a development in the case where mitigation measures substantially fail.
Indeterminable Effects	When the full consequences of a change in the environment cannot be described.
Irreversible Effects	When the character, distinctiveness, diversity or reproductive capacity of an environment is permanently lost.
Residual Effects	The degree of environmental change that will occur after the proposed mitigation measures have taken effect.
Synergistic Effects	Where the resultant impact is of greater significance than the sum of its constituents.

Table 1d. Significance of Effects (terminology based on EPA 2017; CIEEM 2016).

Impact magnitude	Definition/Rationale
Imperceptible	An effect capable of measurement but without noticeable consequences.
Not Significant	An effect that causes noticeable changes in the character of the environment but without significant consequences.
Slight Effects	An effect that has noticeable consequences without affecting its sensitivities.
Moderate Effects	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Significant Effects	A significant effect is one which undermines the conservation objectives for '**important ecological features'** (CIEEM, 2016). In broad terms, significant effects encompass impacts upon the structure and function of a defined site, its habitats and species and their conservation status; or in other words on site integrity**. The EPA (2017) measure these effects as those that significantly alter a sensitive aspect of the environment.
Very Significant Effects	An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment.
Profound Effects	An effect that obliterates sensitive characteristics.

** Integrity is defined as 'the integrity of a site is the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified.

Table 1e. Quality of Effects (terminology based on EPA, 2017)

Impact magnitude	Definition/Rationale
Positive Effects	A change which improves the quality of the environment (e.g. increasing species diversity, improving reproduction capacity or by removing nuisances).
Neutral Effects	No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
Negative Adverse Effects	A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem; damaging health or property or by causing nuisance).

Appendix 2

Certificate of Competence

Limosa Environmental was established by **Dr Lesley J Lewis** and associates in 2004 and has since amassed a range of experience across both the private and public sectors. Our aim is to provide a first-class professional service at competitive prices in line with national and international best practice and adhering to the codes of conduct laid down by the Chartered Institute of Ecology and Environmental Management. We can provide a wide range of ecological and environmental services, bringing together teams of professionally qualified, accredited and specialist ecologists and environmental scientists to meet the specific requirements of each individual project. We hold current Professional Indemnity and Public Liability Insurances.

Relevant Experience in relation to Appropriate Assessment: Dr Lesley J Lewis has over 20 years of experience as a consultant ecologist. She was recently recruited to the panel of expert consultants by An Bord Pleanála.

Recent Experience Ecological Impact Assessment/Appropriate Assessment: development of a Data Centre, Little Island, Cork (2022 private client), private development Baltimore, Co. Cork (2021, private client), light industrial/warehousing development, Little Island, Cork (2021, private client), mixed-use development Carrigaline, Co. Cork (2021, Lidl Ireland), Youghal Front Strand Flood Mitigation Works (2020, Cork County Council), Mixed-use development (2020, Mallow, Co. Cork, Lidl Ireland), development of a light industrial park, Watergrasshill, Cork (2019, private client); Re-development of Carrignacurra Castle, Co Cork (2019, private client), private development Baltimore Co. Cork (2019, private client), bus shelter/accessible stop program – East Cork (2019, Cork County Council), development of a light industrial park, Little Island, Cork (2019, private client); installation of a zip-line on Bull Rock (2019, BirdWatch Ireland), development of a light industrial park/warehousing, Little Island, Cork (2019, private client); development of a light industrial park/warehousing, Watergrasshill, Co. Cork (2019, private client); repair works to sea walls Cork Harbour (2019, Cork County Council); housing development at Newmarket (2018, private client), housing development at Toonsbridge, Macroom (2018, private client), road re-surfacing at Toonsbridge, Macroom, Co. Cork (2018, for Cork County Council), development of pedestrian footbridges Castlemartyr, Co. Cork (2018, Cork County Council), private development Castletownbere Co. Cork (2018, private client), residential/business development Clonakilty, Co. Cork (2018, private client), re-development of site of former Duhallow Park Hotel (2018, private client), housing development (50 houses) Carrigtwohill, Co. Cork (2018, private client), road re-surfacing at Toonsbridge, Macroom, Co. Cork (2017, for Cork County Council), development of a discount foodstore Fermoy, Cork (2017, Lidl Ireland), housing development (47 houses), Cobh, Co Cork (2017, private client), extension to light industrial unit, Little Island, Cork (2017, private client), development of a discount foodstore Douglas, Cork (2017, Lidl Ireland), works to sea walls at Rosscarbery (2017 Cork County Council), development of a footbridge at Killeagh Co Cork (2017, Cork County Council), development of an eco-campsite in West Cork (2016, private client), Rosscarbery flood defence works (2016, Cork County Council), development of Lidl stores at Mallow and Kanturk (2016, Lidl Ireland).

Relevant Experience in relation to coastal ecology, wetlands and waterbirds:
1999- 2003 PhD Studies - Ecological disturbance and its effects on estuarine benthic invertebrate communities and their avian predators (wading birds).

Waterbird Surveys: Co-ordinator and participant in waterbird surveys at Bannow Bay (Co Wexford) during winters of 2014/15 – 2018/19 (for Inis Environmental/Marine Institute); Survey team member for waterbird surveys at Dungarvan Harbour (2015/16, 2017/18, 2018/19, 2020/21 and 2021/22 Atkins Ireland for the Marine Institute); Monthly I-WeBS counts at various sites including Clonakilty Bay (Co Cork) and Dungarvan Harbour (Co. Waterford) (September to March annually and on-going), waterbird surveys as part of ecological monitoring of Youghal Landfill (2014-2016, Cork County Council), and East Cork Landfill (2006 - 2016, Cork County Council). Survey team member during the NPWS Waterbird Survey Programme (2009-2012) including Courtmacsherry Estuary, Ballyteigue Burrow, Dungarvan Harbour, Dundalk Harbour, Bannow Bay, Blackwater Estuary and Cork Harbour.

UCC Project Supervisor – Student supervisor that resulted in a published paper: Murphy, S., **Lewis, L. J.** & Kelly T. C. (2006) The spatial ecology of wildfowl in Courtmacsherry Bay, Southern Ireland, with particular reference to Shelduck *Tadorna tadorna*. *Irish Birds* 8, 51-58.

Estuarine benthic studies - annual benthic study of the River Fergus Estuary (2006 – current, private client); intertidal survey of the Owenboy estuary (2013 Atkins Ireland Ltd), benthic surveys of Rossmore Bay and peninsula (as part of annual monitoring of East Cork Landfill (2006 – 2014, Cork County Council); benthic surveys of Tramore Bay (as part of annual monitoring of Tramore Landfill (2004 – 2008, Waterford County Council); benthic surveys of upper Colligan Estuary (as part of annual monitoring of Dungarvan Landfill (2004 – 2008, Waterford County Council).

Project Manager BirdWatch Ireland (P/T 2009 - current) – Lesley is the current Project Manager of the Irish Wetland Bird Survey (I-WeBS) and Countryside Bird Survey (CBS).

Birds of Conservation Concern in Ireland (BoCCI4) – co-author of the most recent assessment of the status of birds in Ireland (Gilbert et al. 2021). Presented this work to government ministers (Malcolm Noonan TD and Pippa Hackett TD).

Waterbird Ecologist (2009–2014) – As a BWI employee, Lesley was contracted to the National Parks & Wildlife Service (NPWS) between 2009 and 2014. In her role as 'Waterbird Ecologist' Lesley was responsible for the design and implementation of the NPWS Waterbird Survey Programme. Lesley was the project manager for the programme of surveys that ran over three winters (2009/10, 2010/11 and 2011/12) with surveys undertaken across 32 coastal Special Protection Areas (SPAs). Data collected from the low tide waterbird survey programme were analysed and used in the process of formulating conservation objectives for coastal SPAs. Lesley worked on all aspects of this process from the initial stages of conception and development, data analysis, through to the production of conservation objectives documents for all 32 coastal SPAs. This work culminated in the publication of standard low-tide survey methods for waterbirds (Lewis & Tierney, 2014).

Recent relevant selected publications and reports:

Kennedy, J., Burke, B., Fitzgerald, N., Kelly, S.B.A., Walsh, A.J. & **Lewis, L.J.** (2022) Irish Wetland Bird Survey: I-WeBS National and Site Trends Report 1994/95 – 2019/20. BirdWatch Ireland Waterbird Report to the National Parks and Wildlife Service. BirdWatch Ireland, Wicklow. (*https://birdwatchireland.ie/app/uploads/2022/04/iwebs_trends_report.html*)

Burke, B., Fitzgerald, N., Kelly, S. & **Lewis, L.J.** (2022) Greylag and Pink-footed geese in Ireland 2017/18- 19/20. Irish Wetland Bird Survey (I-WeBS) Report. BirdWatch Ireland, Wicklow.

Gilbert, G., Stanbury, A. & Lewis, L.J. (2021) Birds of conservation concern in Ireland 4 2020 – 2026. *Irish Birds* 43, 1-22.

Burke, B., McElwaine, J. G., Fitzgerald, N., Kelly, S.B.A., McCulloch, N., Walsh, A. J., & Lewis, L. J. (2021) Population size, breeding success and habitat use of Whooper Swan *Cygnus cygnus* and Bewick's Swan Cygnus *columbianus bewickii* in Ireland: results of the 2020 International Swan Census. *Irish Birds* 43, 57-70.

Lewis, L. J. & Hayes, W. (2019) Waterbird survey of Lough Gur, County Limerick 2018 – 2019. Final Report. Report commissioned by Limerick City & County Council in association with Lough Gur Development Co-Operative Society Ltd and prepared by BirdWatch Ireland and Limosa Environmental. June 2019.

Lewis, L. J., Burke, B., Fitzgerald, N., Tierney, T. D. & Kelly, S. (2019) Irish Wetland Bird Survey: Waterbird Status and Distribution 2009/10 - 2015/16. Irish Wildlife Manuals No. 106. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht, Ireland.

Lewis, L. J. (2019) An assessment of the effects of recreational and other activities on the waterbirds using the Bull Island saltmarsh. Final Report. Report commissioned by Dublin City & County Council and prepared by BirdWatch Ireland. April 2019.

Adcock, T., Lewis, L. J. & Hodd, R. (2019) Sutton to Sandycove (S2S) cycleway and footway ecology and ornithological monitoring 2018-2019. Report by BirdWatch Ireland to Dublin City Council. June 2019.

Burke, B., **Lewis, L. J.,** Fitzgerald, N., Frost, T., Austin, G. & Tierney, T. D. (2018) Estimates of waterbird numbers wintering in Ireland, 2011/12 – 2015/16. *Irish Birds* 11, 1-12.

Burke, B. & **Lewis, L. J.** (2018) Assessment of numbers and distribution of post-breeding terns at Irish coastal wetlands in August and September 2017. BirdWatch Ireland & the National Parks & Wildlife Service.

Pavon-Jordán, D., Clausen, P., Dagys, M., Devos, K., Encarnacao, V., Fox, A. D., Frost, T., Guadard, C., Hornman, M., Keller, V., Langendoen, T., Tawocki, T., **Lewis, L. J.,** Lorentsen, S-H., Luigujoe, L., Meissner, W., Molina, B., Musil, P., Musilova, Z., Nilsson, L., Paquet, J-Y., Ridzon, J., stipniece, A., Teufelbauer, N., Wahl, J., Zentatello, M & Lehikoinen, A. (2018) Habitat- and species-mediated short- and long-term distributional changes in waterbird abundance linked to variation in European winter weather. Diversity & Distributions https://doi.org/10.1111/ddi.12855.

Burke, B., Fitzgerald, N. & **Lewis, L. J.** (2018) Irish Wetland Bird Survey: Results of waterbird monitoring in Ireland 2015/16. BirdWatch Ireland & the National Parks & Wildlife Service.

Lewis, L. J., Fennessy, G. & Cummins, S. (2018) Light-bellied Brent Goose *Branta bernicla hrota* at Sruwaddacon Bay, north-west Co. Mayo, Ireland. Goose Bulletin 2018.

Lewis, L. J. Austin, G., Boland, H., Frost, T., Crowe, O. & Tierney, T. D. (2017) Waterbird populations on non-estuarine coasts of Ireland: results of the 2015/16 Non-Estuarine Coastal Waterbird Survey (NEWS-III). Irish Birds 10, 511-522.

Appendix 3

Appended documents:

1. Location map (Source: Henchion Reuters Architects, 2022).
2. Figure - 3D views (Source: Henchion Reuters Architects, 2022).
3. Site layout plan (Source: Henchion Reuters Architects, 2022).
4. Roughan & O'Donovan (ROS) (2023a) Fingal County Council: Baldoyle Community Centre. Engineering Report for planning. January 2023.
5. Roughan & O'Donovan (ROS) (2023b) Fingal County Council: Baldoyle Community Centre. Outline Construction Management Plan. November 2023.
6. Roughan & O'Donovan (ROS) (2023c) Community Centre at Baldoyle Racecouse Park in Fingal. Site specific flood risk assessment. August 2023.
7. Scott Cawley (2019) *Ecological Impact Assessment. Proposed park development project at Racecourse Park, Baldoyle, Dublin 13*. Report prepared for Fingal County Council.
8. Scott Cawley (2021) *Screening report and Natura Impact Statement – Information for Stage 1 Screening and Stage 2 Appropriate Assessment for a proposed development project at Racecourse Park, Baldoyle, Dublin 13*. Report for Fingal County Council.
9. Scott Cawley (2022) *Wintering Bird Survey Report. Baldoyle Racecourse Park.* Prepared for Fingal County Council.

Planning Pack Map

GENERAL NOTES

±0.00 = FINISHED GROUND FLOOR LEVEL

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LEGEND

SITE BOUNDARY = 0.575 (ha)

Description:
Digital Cartographic Model (DCM)

Publisher / Source:
Ordnance Survey Ireland (OSi)

Centre Point Coordinates:
X,Y= 723898.8421,740484.5636

Map Series | Map Sheets
1:1,000 | 3133-10
1:1,000 | 3134-06
1:2,500 | 3134-A
1:2,500 | 3133-B

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P-01	PLANNING ISSUE	30/08/23	KM	EW	MH

PROJECT STAGE
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CLIENT
FINGAL COUNTY COUNCIL

PROJECT
BALDOYLE COMMUNITY CENTRE

DRAWING TITLE
Site Location Map

DRAWING NO.
BCC-HRA-ZZ-00-DR-A-001 | P-01

SCALE
1:1000

DATE
Work in Progress

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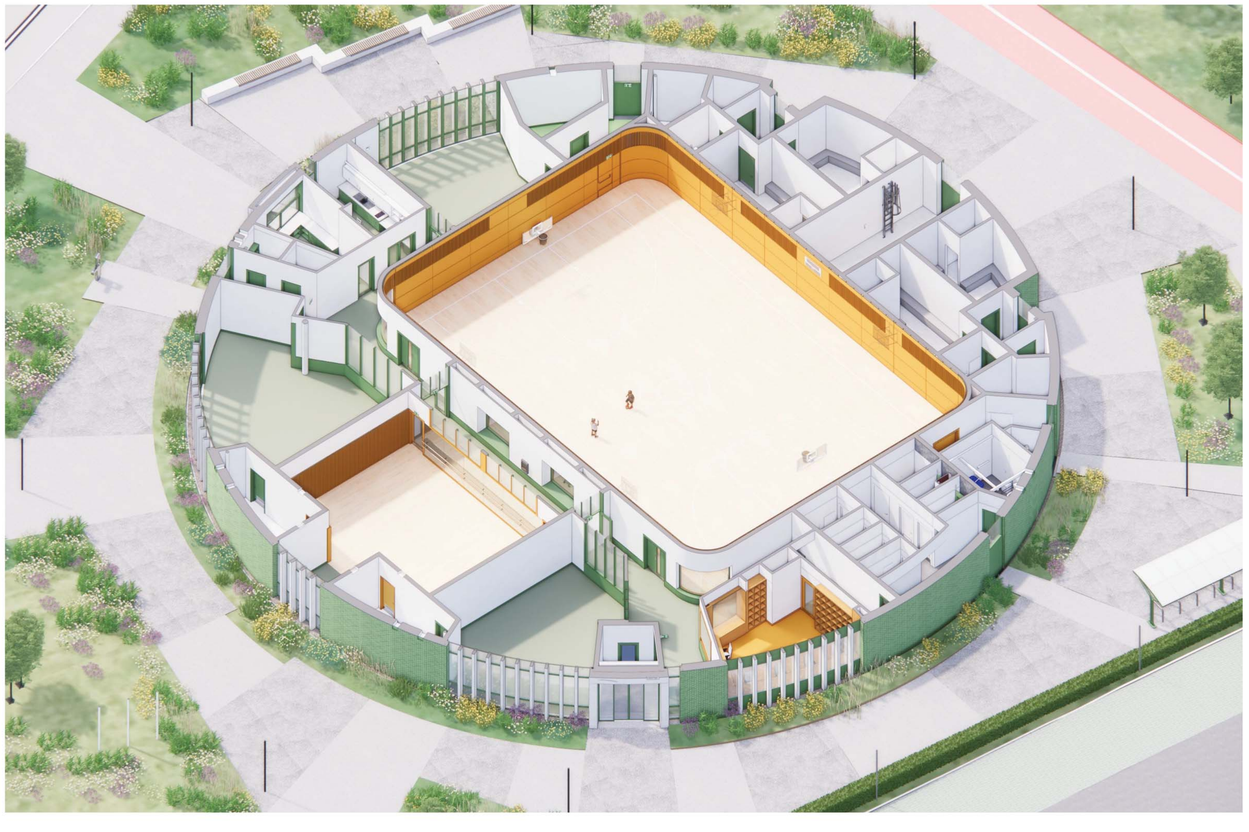

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PROJECT
BALDOYLE COMMUNITY CENTRE

DRAWING TITLE
3D VIEWS

DRAWING NO.
BCC-HRA-ZZ-00-DR-A-401 | P-01

SCALE
1:2.85

DATE
Work in Progress

DRAWN	CHECKED		DRAWING DIMENSIONS
KM	EW	MH	594 x 841mm

REGISTERED ARCHITECT RIAI

ARCHITECT ACCREDITED IN CONSERVATION RIAI

PSDP ACCREDITATIONS RIAI

GRANTED RACECOURSE PARK DEVELOPMENT : **ABP REF: JP06F.311315**

RED ARCHES RD.

LOCATION OF SITE NOTICE

EXISTING WALL AND ENTRANCE TO BE RETAINED ALONG RED ARCHES RD.

VEHICLE ENTRANCE

RETAIN EXISTING BOUNDARY WALL

EXTERNAL CAGED BIN AREA

POLE LIGHTING PRODUCT TBC

12 COVERED BIKE RACKS PRODUCT TBC

OPTIONAL FUTURE FENCE LINE

ENTRANCE

F.F.L.=4.8

FLAG POLES

11 SHEFFIELD CYCLE RACKS

SERVERY HATCH

EXTERNAL WATER BOTTLE FILLING STATION

EXTERNAL CAGED HEAT PUMP ENCLOSURE

BENCH SEATING

APX 16.06
APX 16.21
APX 16.26
APX 16.20
APX 13.60
APX 11.62
APX 11.61
APX 11.64
APX 11.65
APX 11.57
APX 11.56
TOT 12.06
TOT 10.08
TOT 11.71

SITE CONTEXTUAL SECTION A

N

GENERAL NOTES

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LEGEND

SITE BOUNDARY = 0.575 (ha)

No.	Revision	Date	By	Chk'd	App'd
P-01	PLANNING ISSUE	Work in Progress	KM	EW	MH

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PROJECT
BALDOYLE COMMUNITY CENTRE

DRAWING TITLE
SITE PLAN PROPOSED (inc. adjacent park dev)

DRAWING NO. BCC-HRA-ZZ-00-DR-A-005 | P-01

SCALE 1:250 | DATE Work in Progress

DRAWN KM | CHECKED EW | MH | DRAWING DIMENSIONS 594 x 841mm

REGISTERED ARCHITECT RIAI | ARCHITECT ACCREDITED IN CONSERVATION G3 RIAI | PSDP ACCREDITATION RIAI

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Fingal County Council
Baldoyle Community Centre

Engineering Report for Planning

BCC-ROD-00-XX-RP-C-0001-EngRpt P04

ROD
ROUGHAN & O'DONOVAN

Fingal County Council
Baldoyle Community Centre

Engineering Report for Planning

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Appendix B DRAINAGE AND WATERMAIN RECORDS
Appendix C TOPOGRAPHICAL & UTILITY SURVEY
Appendix D IRISH WATER CONFIRMATION OF FEASIBILITY
Appendix E PROPOSED DRAINAGE LAYOUT
Appendix F PROPSOED WATERMAIN LAYOUT
Appendix G SURFACE WATER CALCULATION
Appendix H OPW & MCCLOY CONSULTING FLOOD RISK MAPPING
Appendix I FINGAL COUNTY COUNCIL TAKING-IN-CHARGE DRAWINGS

1. INTRODUCTION

This report has been prepared as part of a planning package submitted on behalf of Fingal County Council regarding the proposed development of a new Community Centre at Baldoyle Racecourse Park, Fingal. This report sets out the Engineering basis for the planning stage design of the scheme in terms of surface drainage, foul drainage, and water supply. This report should be read in conjunction with the following drawings and documents:

- BCC-ROD-00-XX-DR-C-0001 Existing Site Layout
- BCC-ROD-00-XX-DR-C-0005 Proposed Site Layout
- BCC-ROD-00-XX-DR-C-0030 Existing Drainage Layout
- BCC-ROD-00-XX-DR-C-0031 Proposed Drainage Layout
- BCC-ROD-00-XX-DR-C-0040 Existing Watermain Layout
- BCC-ROD-00-XX-DR-C-0041 Proposed Watermain Layout

2. PROPOSED DEVELOPMENT

The proposed development includes the delivery of a new community centre including sports hall, studies, changing rooms and toilet facilities. The development includes the reconstruction of existing parking located to the north of the site, landscaping of the surrounding area within the development site and associated utilities & drainage work.

3. SITE INFORMATION

3.1 Site Location

The site is located off Red Arches Road adjacent to Baldoyle Racecourse Park, Baldoyle, Fingal. The site is bound by the park on three sides, to the south, east and west and Red Arches Road to the north. Access to the Coast Road is gained approximately 400m to the east, and high-density residential developments less than 100m to the west. Refer to Figure 3.1 below for the proposed site location.

Figure 3.1: Site Location

Refer to Appendix A for Existing Site Layout.

3.2 Site Topography

The site is generally flat, with a slight slope from northeast to southwest. The levels across the site range from 4.18MOD at the entrance, to 4.72MOD in the east and 4.24MOD in the south-west. An existing disused building is present to the west of the site, which is accessed via an elevated pedestrian ramp which is currently fenced off. Existing carparking is present to the northwest of the site which is to remain. The existing parking in the centre of the site will be removed to facilitate the building construction.

Refer to Appendix C for Topographical & Utility Survey.

4. WATER SUPPLY

4.1 Existing Water Supply

The existing building is connected to the existing watermain network via a connection from the north to the north elevation of the building. There is a second connection located to the north-east of the building to a hydrant located on the raised footway. Both connections exit the site to the north across Red Arches Road to the existing public watermain located in the footway/cycleway. The size of the watermain is to be confirmed, as this information was not presented as part of the utility survey.

Refer to Appendix B for Drainage and Watermain Records.

Refer to Appendix C for Topographical & Utility Survey.

Refer to Drawings BCC-ROD-00-XX-DR-C-0040 & 0041 for the Existing & Proposed Watermain Layout.

4.2 Proposed Water Supply

The existing connection is to be utilised as part of the works. A pre-connection enquiry has been submitted to Irish Water who have confirmed that the proposed connection is feasible. A Connection Application will be submitted to Irish Water post planning. The building will be connected via a new meter box to Irish Water details, the position of which will be confirmed during the connection application.

The peak daily demand has been calculated as 0.29l/sec.

All watermains have been designed in accordance with Irish Water's '*Code of Practice for Water Infrastructure'* (Document No. IW-CDS-5020-03) and will be constructed in accordance with same and Irish Water '*Water Infrastructure Standard Details'* (Document No. IW-CDS-5020-01).

Refer to Appendix D for Irish Water Confirmation of Feasibility.

Refer to Drawings BCC-ROD-00-XX-DR-C-0041 for the proposed watermain layout.

5. FOUL DRAINAGE

It is proposed to reconfigure and extend the existing separate foul drainage system within the site boundary and to use an existing outfall to discharge from the site.

5.1 Existing Foul Drainage

The site and the existing building are served by an existing 100mm diameter foul drain which outfalls to the west of the site to a larger 225mm diameter foul sewer network.

Refer to Appendix B for Drainage and Watermain Records.

Refer to Drawings BCC-ROD-00-XX-DR-C-0030 for the existing drainage layout.

5.2 Proposed Foul Drainage

The existing 100mm diameter foul drain and outfall will be used to serve the new development. There will be some modifications to the drainage lines within the site boundary to cater for the new pop-up locations.

The wastewater network has been designed in accordance with Irish Water's '*Code of Practice for Wastewater Infrastructure'* (Document No. IW-CDS-5030-03) and will be constructed in accordance with same and Irish Water '*Water Infrastructure Standard Details'* (Document No. IW-CDS-5030-01).

Refer to Drawings BCC-ROD-00-XX-DR-C-0031 for the proposed drainage layout.

6. SURFACE WATER DRAINAGE

It is proposed to provide a new separate surface system to serve the development. This section outlines the existing surface water drainage services surrounding the site and gives our proposals for the surface water drainage requirements as part of the development.

6.1 Existing Surface Water Drainage

There is an existing surface water drainage network located within the site which includes a series of gullies and manholes. This outfalls from the site access to a main surface water sewer located at Red Arches Road. The manhole that the existing network discharges to is identified as manhole S53 on FCC´s ´Taking-In-Charge´ drawing that is included in the appendices. Adjacent to this, there is another manhole on a separate line, S56, which is also in the charge of FCC. Both lines, that are in the charge of FCC, subsequently flow to the north. No attenuation was recorded on site from the utility survey. An existing petrol interceptor is located adjacent the existing carpark before the outfall to the main sewer.

Refer to Appendix B for Drainage and Watermain Records.
Refer to Appendix I for Fingal County Council´s Taking-In-Charge drawings.

Refer to Drawing BCC-ROD-00-XX-DR-C-0030 for existing drainage layout.

6.2 Proposed Surface Water Drainage

It is proposed to construct a new surface water drainage system for the building and carpark, however, this system will utilise the existing connection to the manhole at Red Arches Road which is in the charge of FCC.

The site will be attenuated for the 1-in-100 year + 20% climate change event. It has been calculated that 62.49m^3 of combined on site storage will allow the site to achieve a greenfield discharge rate of 2 L/s without experiencing any flooding on site within the 1 in 100 year + 20% climate change. This is being incorporated through a mixture of underground storage in the form of pipework and permeable paving or grasscrete, above ground attenuation in the form of grassed rain gardens.

The use of soakaways has been confirmed as unfeasible following a ground investigation, for the purpose of these calculations no permeability of the soil has been used to determine the maximum attenuation required. A breakdown of the SUDS features is illustrated below in Table 6.2.

SUDS Storage Features		m^3 Storage
Permeable carpark	Area 1	5.01 m^3
	Area 2	4.98 m^3
Above ground attenuation	Area 1	25.5 m^3
	Area 2	9.3 m^3
	Area 3	17.7 m^3
	Total	62.49 m^3

Table 6.2: SUDS Storage Features

The stormwater system is designed for 50mm/hr rainfall intensity as per Greater Dublin Strategic Drainage Study (GDSDS). They were designed for a minimum self-cleansing velocity of 0.7m/s in accordance with BS EN 16933-2:2017 and the Greater Dublin Strategic Drainage Strategy. However, following consultation with Fingal

County Council Drainage department, an allowance for climate change of 20% was included rather than the 10% allowance called up in the GDSDS.

Refer to Appendix G for Surface Water Calculations.

Refer to Drawings BCC-ROD-00-XX-DR-C-0031 for proposed drainage layout.

6.2.1 SUDS Approach

This should be read in conjunction with the following:

(i) BCC-ROD-00-XX-DR-C-0031

The proposed SuDS features will include a combination of Source Control, Site Control and Regional Control measures as part of a Management Train whereby the surface water is managed locally in small sub-catchment rather than being conveyed to and managed in large systems further down the catchment.

Where possible the potential for surface water infiltration to the subsoil should always be utilised to help reduce the impact on the existing surface water drainage network downstream. However, a detailed ground investigation has not yet been carried out on the site. This proposed investigation will include for infiltration tests and should the ground prove suitable, this will also be incorporated into the system at detailed design stage.

It is proposed to provide the following SuDS measures:

1) Permeable Paving
2) Rain Garden with stone base below
3) Surface water pipes
4) Green roof
5) Petrol interceptor

Attenuation

Attenuation will be provided beneath three number rain gardens/soakaways located to the west, south and east of the proposed building. These grassed areas will act as attenuation for the site, allowing surface water to accumulate to a maximum high water level during a 1 in 100 year + 20% storm event. The rain water will continue to the discharge manhole to the north of the site, where the flow will be restricted to a green field run off rate of 2 L/s.

While it is acknowledged that Fingal County Council discourage the use of underground attenuation on sites, it is noted that the site in this case is extremely tight and that it is simply not possible to meet the storage requirements using other methods alone.

Grasscrete Paving

It is proposed that grasscrete paving will be used below the car parking area. Design of which will be subject to further design at detailed design stage. The paving will act as temporary storage for rainwater from the parking and roads to the north of the site. Grasscrete paving will also act to reduce the discharge of oil spillages from the site, as the primary area where vehicle movements are experienced are to be drained via permeable paving. A petrol interceptor is being provided as an additional means of reducing the discharge of oils and spillages from the site.

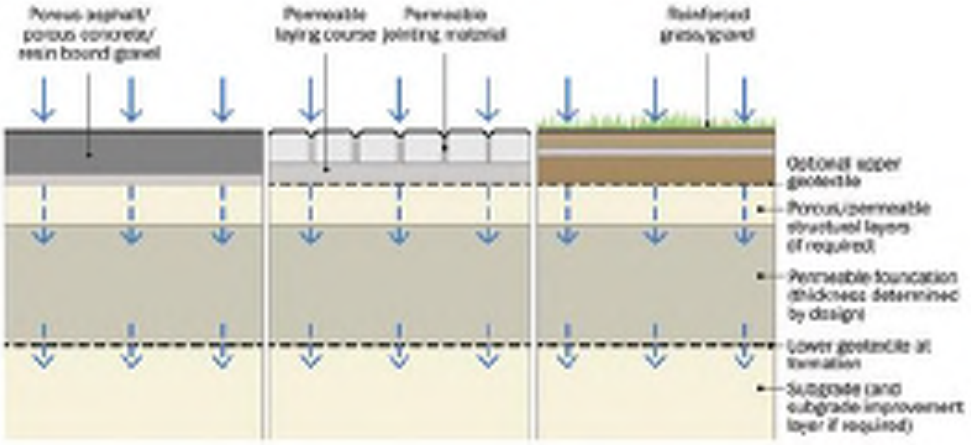


Figure 6.2 'SUDs Manual Figure 20.14 Pervious Pavement System Type A- Total Infiltration'

Green Roof

It is intended for a portion of the community centre to feature a green roof. This will assist in reducing the run off rate from the roof and to act as treatment for the storm water. The green roof design will be subject to further design at detailed design stage. The roof will not act as storage for water on the roof but an allowance for impermeability has been taken as per the calculations.

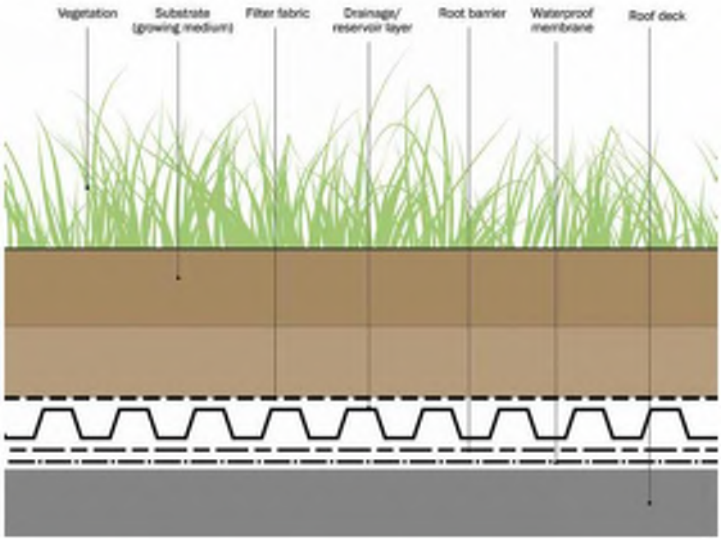


Figure 6.4 'SUDs Manual Figure 12.1 Section through a typical green roof'

Impermeability Factors

The impermeability factors of 0.6 for streets and footways, 0.6 for green roof and 0.1 for grassed areas are chosen in line with Table 26.14 'Impermeability and pollution indices for different land use types' of the SUDs Manual. This table has been reproduced below.

ANNEX 5

TABLE 26.14 Impermeability and pollution indices for different land use types[1]

Land use surface type (LUST)	Impermeability (IMP_{RF})	Total suspended soluds pollution index (PI_{TSS})	Organic pollution index (PI_{Org})	Hydrocarbon pollution index (PI_{PAH})	Metals pollution index (PI_{HM})
Roofs					
• industrial/commercial	1.0	0.3	0.3–0.4	0.2	0.4–0.8
• residential	0.9	0.4–0.5	0.6–0.7	0.1	0.2–0.5
Highways					
• motorways	0.8–0.9	0.9	0.7	0.9	0.8
• major arterial highways	0.7–0.8	0.8	0.7	0.8	0.8
• urban distributor roads	0.6–0.7	0.7–0.8	0.5	0.8	0.7
• residential streets	0.4–0.6	0.4	0.6	0.6	0.6
• pavements	0.5–0.6	0.4	0.6	0.3	0.3
Car parks/hardstanding					
• industrial/commercial	0.6–0.8	0.6–0.7	0.6–0.7	0.7	0.4–0.5
• driveways (residential)	0.5	0.5	0.6	0.4	0.3
Open areas					
• gardens (all types)	0.1	0.3	0.2–0.3	0	0.01
• parks/golf courses	0.2	0.2–0.3	0.2	0	0.02
• grassed areas (including verges, all types)	0.1	0.2–0.3	0.2–0.3	0.05	0.05

Note

1 Pollution index values are based on reported land use type EMC distributions and impact potential thresholds from House *et al* (1993), Luker and Montague (1994), Butler and Clark (1995), D'Arcy *et al* (2000), Mitchell (2005) and Moy *et al* (2003).

Figure 6.5 'SUDs Manual Table 26.14 Impermeability and pollution indices for different land use type'

7. FLOOD RISK ASSESSMENT

A flood risk assessment was carried out as part of the preliminary design of the project, this included a review of the following flood risks present for the site;

- Tidal; flooding from high sea levels
- Fluvial; flooding from water courses
- Pluvial; flooding from rain & surface water
- Development surcharges; flooding from existing surface water sewers

The low risk level associated with these items is detailed in the sections below.

Furthermore, the flood maps produced by McCloy Consulting as part of the *Stage 3 Material Alterations to the Draft Fingal County Development Plan 2023-2029* indicate that the site is within Flood Zone C (low risk >0.1% AEP) for the current and mid-range scenarios.

Refer to Appendix H for OPW and McCloy Consulting flood risk mapping.
Refer to Appendix I for Fingal County Council´s Taking-In-Charge drawings.
Refer to Drawings BCC-ROD-00-XX-DR-C-0031 for proposed drainage layout

7.1 Tidal

The site is located approximately 450m from the Irish Sea/Dublin Bay. The road level remains at approx. 5m MOD until the Coast Road, after which the verge slopes down to sea level.

The Dublin Coastal Protection Project indicated a 2002 high tide event where the water level reached 2.95 MOD. The proposed finished floor level of the community centre is at 4.8m, 1.85m above this high-water level, therefore tidal flooding risk is considered to be low.

7.2 Fluvial

The site is located approximately 150m from a historic ditch which acts as a land runoff for the Mayne River which flows into Dublin Bay. The OPW fluvial flood extent map MAY/HPW/EXT/CURS/003 illustrates the closest reference point of 1Maa675 which extracts the following information.

Node Label	Water Level mOD 10% AEP	Water Level mOD 1% AEP	Water Level mOD 0.1% AEP
1Maa675	2.50	2.85	3.46

Table 7.2; Fluvial Map Node information

As the proposed finished floor level is at 4.8m, the highest water level anticipated from fluvial flooding is 1.34m below the proposed finished floor level, therefore fluvial flood risk is considered low.

7.3 Pluvial

Previous flood events were analysed as part of the preliminary flood risk review. Two events were noted which were closest in proximity from the proposed site, located approximately 380-500m south. These events occurred in 2011 & 2002, with both events being noted as a result of excessive rainfall and the existing surface water systems being unable to accommodate the heavy rainfall. These events were not considered a risk to the proposed development due to the distance from each, and the proposed overground attenuation on the site which will act as storage for such heavy rainfall events.

7.4 Development Surcharges

The surrounding area was analysed in terms of development and existing surface water infrastructure surrounding the site.

There is existing FCC surface water drainage infrastructure in Red Arches Road with the closest manholes to the site being S53 & S56 indicated on FCC´s TIC drawings. The OPW Flood Event Maps do not indicate any issues with this infrastructure. We met with FCC Drainage personnel on site on the 20th January 2022 who were not aware of any surcharge issues.

Baldoyle Racecourse park is adjacent the development site. Runoff from the park is not considered to be a risk as along the eastern perimeter of the site, the levels reduce to form a ditch and tree line between the site and the park. To the south and west of the site, the ground slopes away from the site. This combined with the proposed finished floor level of the building means that there is a low risk of flooding from surface water flows from the surrounding areas.

7.5 Surface Water Connection

The existing connection to the public surface water sewer is to be maintained. An underground CCTV survey is planned to be carried out at detailed design stage to ensure the existing connection is of a good state and the connection is to the existing manhole which discharges to the north. Following a site meeting with FCC Drainage personnel on the 20th January 2022, it was identified that maintaining the existing connection to the manhole in Red Arches Road (S53 on FCC´s TIC drawings) was the most appropriate approach. The outfall from the proposed site will be reduced

considerably from the existing as the proposals include restricting the discharge from the site to 2 l/s and incorporating overground attenuation within the site.

7.6 Flood Risk Conclusion

Following the above analysis it is considered that the proposed development is not subject to an adverse risk of flooding based on the historic desktop survey carried out.

For fluvial and coastal flooding, the Flood Maps indicate that the site is within Flood Zone C (low risk >0.1% AEP).

For development surcharges, a detailed surface water analysis has been carried out for the proposed development which shows that the site is anticipated to experience no flooding in a 1 in 100 year plus 20% climate change storm event. In any case, should an extreme storm event occur, the overground attenuation areas will overflow, and surface water is directed away from the building to ensure the building does not experience flooding from surface water sources.

8. BUILDING

8.1 Structure

A superstructure scheme has been identified which is likely to be the most cost-effective solution to accommodate the requirements of the curved roof profile with minimal structural depth, spanning over the large open sports hall.

The main steel structural frame will consist of a portal frame structure formed by columns and skewed rafters. Skewed rafters with varying alignment of the vertical member axis and with stepped heights have been adopted to facilitate the required roof curvature perpendicular to the span.

The span of the frames is approximately 18.0m (matching the width of the sports hall) and in the orthogonal direction, a bay spacing of 4.8m has been adopted.

8.2 Rafters & Columns

Rafters and columns with a 533x210x122 UB section size are envisaged. The rafter to column connection will be a moment connection providing lateral stability in this direction. The columns will be bolted to the RC roof slab of the surrounding low-rise areas, giving a column height of approximately 4m above this level.

The rafters will be tied-in the perpendicular direction by steel beams (139 CHS).

Trimmers for roof lights will consist of 203 UC 46 sections.

The frame will be provided with roof and longitudinal bracing which will provide the building's lateral stability in the orthogonal direction to the portal moment frames.

All the steel grades for the portal frame members will be grade class S355 and the required execution class will be Execution Class 3.

8.3 Surrounding Walls

The low-rise areas surrounding the sports hall will typically be formed using 215mm blockwork walls with an RC roof slab. Where a sloped roof is required to these areas (either end of sports hall) it is envisaged that a steelwork frame formed by 203 UC 46 sections will bolted to the RC roof slab at 4m c/c.

8.4 Substructure

The ground investigation works undertaken to date indicate the presence of Made Ground to depths of approximately 4m overlying a thin layer of soft organic silts / sands or gravels which extend to depths of between 4m and 4.80m. These strata are underlain by a very stiff to hard black gravelly clay and the boreholes all extended to the target depth of 10m in this very stiff Dublin Black Boulder Clay.

Foundations will have to be transferred to the black gravelly clays, probably by short driven piles, with pile depths of circa 8m envisaged. The adoption of precast driven piles should also limit the amount of arisings to be disposed of.

An alternative approach adopting deep trench fill below strip footings and pad foundations is also possible. However, the presence of made ground could result in significant costs in relation to the disposal of excavated soil from the site.

9. SUMMARY

- The proposed development will have separate foul and surface water drainage system to serve the site.

- Surface water will be attenuated on site for the 1-in-100 year event including an allowance of +20% for climate change, and will discharge through a series of green roofs, an attenuation tank, permeable paving and an oversized pipe. The surface water system has been modelled in accordance with the Greater Dublin Area Strategic Drainage Study, with self-cleansing and discharge capacity is achieved based.

- A portion of the building will incorporate a green roof as a form of water treatment and to help slow the rate of surface water discharge from the site.

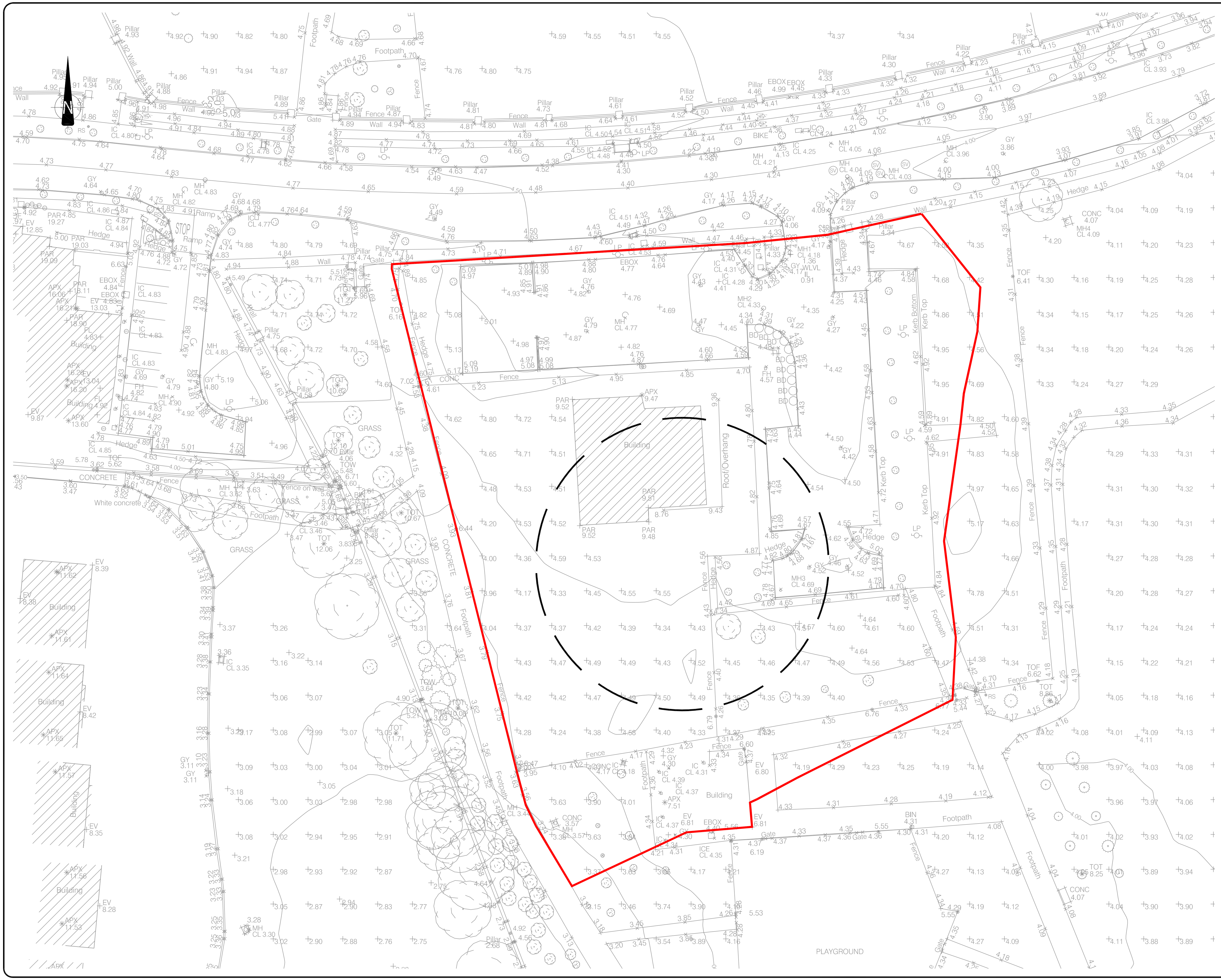
- Water will be supplied for this development via an existing connection located to the north of the site. The watermain has been designed fully in accordance with the Irish Water Code of Practice.

- The existing surface water outfall to FCC´s infrastructure in Red Arches Road will be maintained.

- The existing foul drainage outfall to the west of the site will be maintained. New drainage elements within the site will be designed fully in accordance with the Irish Water Code of Practice.

- Flooding from external and or internal sources is not considered likely due to analysis of flood records for the area. Flood maps indicate that the site is within Flood Zone C (low risk >0.1% AEP).

APPENDIX A
EXISTING SITE LAYOUT



NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ENGINEER'S AND ARCHITECT'S DRAWINGS, SPECIFICATIONS AND DESIGNER'S RISK ASSESSMENTS.
2. ALL LEVELS ARE IN METRES TO ORDNANCE DATUM, MALIN HEAD.
3. THE TOPOGRAPHICAL INFORMATION IS REPLICATED FROM INFORMATION RECEIVED FROM OTHERS AND IS ISSUED AS BACKGROUND INFORMATION ONLY.

LEGEND:

- EXISTING BUILDING
- OUTLINE OF PROPOSED BUILDING
- SITE BOUNDARY

No.	Revision	Date	By	Chk'd	App'd
P02	ISSUE FOR INFORMATION	17.04.23	GH	SK	KOR
P01	ISSUE FOR INFORMATION	11.11.22	RE	SK	KOR

Project Stage

FOR PLANNING APPROVAL

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Client: FINGAL COUNTY COUNCIL

Project Title: BALDOYLE COMMUNITY CENTRE

Drawing Title: EXISTNG SITE LAYOUT

Drawing Number: BCC-ROD-00-XX-DR-C-0001 Rev: P02

Scale: 1:250 @A1 | Date: NOV' 22 | Job No: 21.115.101 | Status Code: S2 - FOR INFORMATION

Drawn: RE | Checked: SK | Approved: KOR

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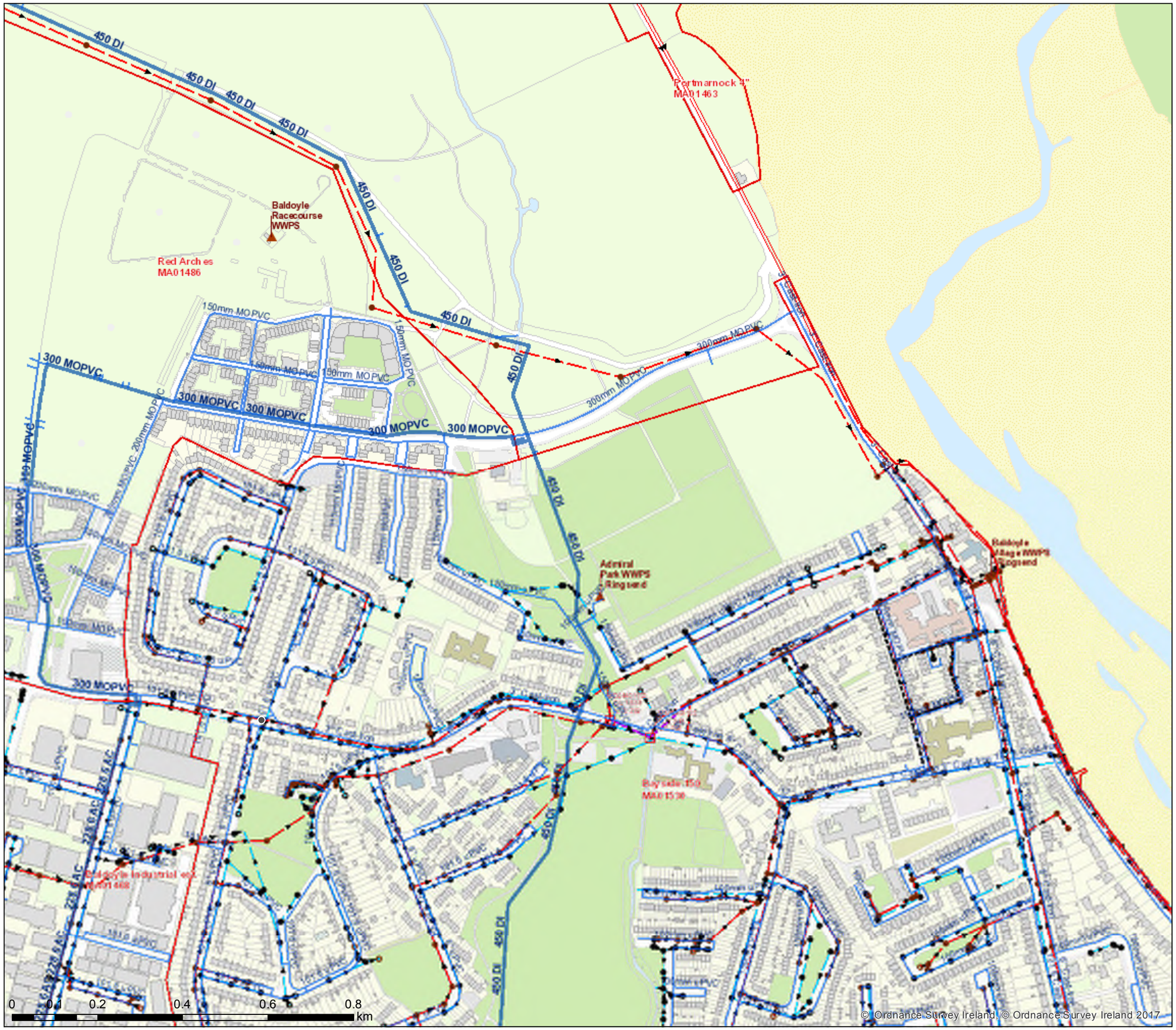
APPENDIX B
DRAINAGE AND WATERMAIN RECORDS

SR272-2021 Baldoyle



UISCE ÉIREANN : IRISH WATER

Print Date: 17/04/2021

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NOTE: DIAL BEFORE YOU DIG Phone: 1850 427 747 or e-mail dig@gasnetworks.ie - The actual position of the gas/electricity distribution and transmission network must be verified on site before any mechanical excavating takes place. If any mechanical excavation is proposed, hard copy maps must be requested from GNI re gas. All work in the vicinity of gas distribution and transmission network must be completed in accordance with the current edition of the Health & Safety Authority publication,
'Code of Practice For Avoiding Danger From Underground Services' which is available from the Health and Safety Authority (1890 28 93 89) or can be downloaded free of charge at www.hsa.ie."

Water Distribution Network
- Water Treatment Plant
- Water Pump Station
- Storage Cell/Tower
- Dosing Point
- Meter Station
- Abstraction Point
- Telemetry Kiosk

Reservoir
- Potable
- Raw Water

Water Distribution Mains
- Irish Water
- Private

Trunk Water Mains
- Irish Water
- Private

Water Lateral Lines
- Irish Water
- Non IW
- Water Casings
- Water Abandoned Lines
- Boundary Meter
- Bulk/Check Meter
- Group Scheme
- Source Meter
- Waste Meter
- Unknown Meter ; Other Meter
- Non-Return
- PRV
- PSV
- Sluice Line Valve Open/Closed
- Butterfly Line Valve Open/Closed
- Sluice Boundary Valve Open/Closed
- Butterfly Boundary Valve Open/Closed
- Scour Valves
- Single Air Control Valve
- Double Air Control Valve
- Water Stop Valves
- Water Service Connections
- Water Distribution Chambers
- Water Network Junctions
- Pressure Monitoring Point
- Fire Hydrant
- Fire Hydrant/Washout

Water Fittings
- Cap
- Reducer
- Tap
- Other Fittings

Sewer Foul Combined Network
- Waste Water Treatment Plant
- Waste Water Pump station

Sewer Mains Irish Water
- Gravity - Combined
- Gravity - Foul
- Gravity - Unknown
- Pumping - Combined
- Pumping - Foul
- Pumping - Unknown
- Syphon - Combined
- Syphon - Foul
- Overflow

Sewer Mains Private
- Gravity - Combined
- Gravity - Foul
- Gravity - Unknown
- Pumping - Combined
- Pumping - Foul
- Pumping - Unknown
- Syphon - Combined
- Syphon - Foul
- Overflow
- Sewer Lateral Lines
- Sewer Casings

Sewer Manholes
- Standard
- Backdrop
- Cascade
- Catchpit
- Bifurcation
- Hatchbox
- Lamphole
- Hydrobrake
- Other; Unknown

Discharge Type
- Outfall
- Overflow
- Soakaway
- Standard Outlet
- Other; Unknown

Cleanout Type
- Rodding Eye
- Flushing Structure
- Other; Unknown

Sewer Inlets
- Catchpit
- Gully
- Standard
- Other; Unknown

Sewer Fittings
- Vent/Col
- Other; Unknown

Storm Water Network

Surface Water Mains
- Surface Gravity Mains
- Surface Gravity Mains Private
- Surface Water Pressurised Mains
- Surface Water Pressurised Mains Private

Inlet Type
- Gully
- Standard
- Other; Unknown

Storm Manholes
- Standard
- Backdrop
- Cascade
- Catchpit
- Bifurcation
- Hatchbox
- Lamphole
- Hydrobrake
- Other; Unknown
- Storm Culverts
- Storm Clean Outs
- Stormwater Chambers

Discharge Type
- Outfall
- Overflow
- Soakaway
- Other; Unknown

Gas Networks Ireland
- Transmission High Pressure Gasline
- Distribution Medium Pressure Gasline
- Distribution Low Pressure Gasline

ESB Networks

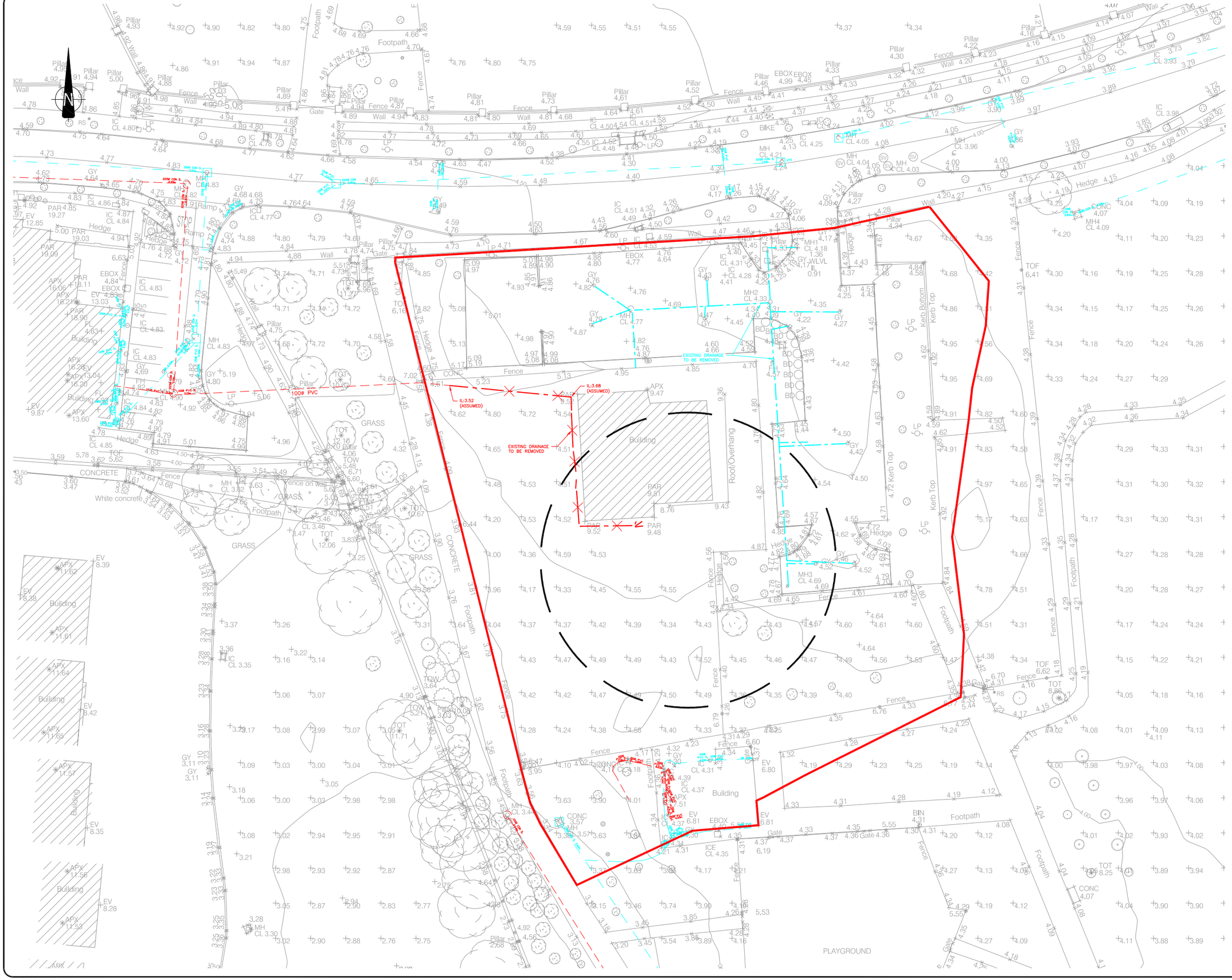
ESB HV Lines
- HV Underground
- HV Overhead
- HV Abandoned

ESB MVLV Lines
- MV Overhead Three Phase
- MV Overhead Single Phase
- LV Overhead Three Phase
- LV Overhead Single Phase
- MVLV Underground
- Abandoned

Non Service Categories
- Proposed
- Under Construction
- Out of Service
- Decommissioned

Water Non Service Assets
- Water Point Feature
- Water Pipe
- Water Structure

Waste Non Service Assets
- Waste Point Feature
- Sewer
- Waste Structure



NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ENGINEER'S AND ARCHITECT'S DRAWINGS, SPECIFICATIONS AND DESIGNER'S RISK ASSESSMENTS.
2. ALL LEVELS ARE IN METRES TO ORDNANCE DATUM, MALIN HEAD.
3. THE TOPOGRAPHICAL INFORMATION IS REPLICATED FROM INFORMATION RECEIVED FROM OTHERS AND IS ISSUED AS BACKGROUND INFORMATION ONLY.

LEGEND:

- SITE BOUNDARY
- EXISTING BUILDING
- OUTLINE OF PROPOSED BUILDING
- EXISTING SURFACE WATER SEWER/DRAIN
- EXISTING FOUL WATER SEWER/DRAIN
- EXISTING COMBINED SEWER/DRAIN
- EXISTING SURFACE WATER SEWER/DRAIN WITH MANHOLE TO BE REMOVED
- EXISTING FOUL WATER SEWER/DRAIN WITH MANHOLE TO BE REMOVED

No.	Revision	Date	By	Chkd	Appd
P03	ISSUE FOR INFORMATION	17.04.23	GH	SK	KOR
P02	ISSUE FOR INFORMATION	05.01.23	LW	SK	KOR
P01	ISSUE FOR INFORMATION	11.11.22	RE	SK	KOR

Project Stage

FOR PLANNING APPROVAL

ROD ROUGHAN & O'DONOVAN

Offices:
Dublin - Sandyford & Santry
Leeds - Otley
Ireland t +353 (0) 1 294 0800
UK t +44 (0) 113 360 1720

Client: FINGAL COUNTY COUNCIL

Project Title: BALDOYLE COMMUNITY CENTRE

Drawing Title: EXISTNG DRAINAGE LAYOUT

Drawing Number			Rev.
BCC-ROD-00-XX-DR-C-0030			P03
Scale: 1:250 @A1	Date: NOV' 22	Job No: 21.115.101	Status Code: S2 - SUITABLE FOR INFORMATION
Drawn: RE / Checked: SK	Approved: KOR		

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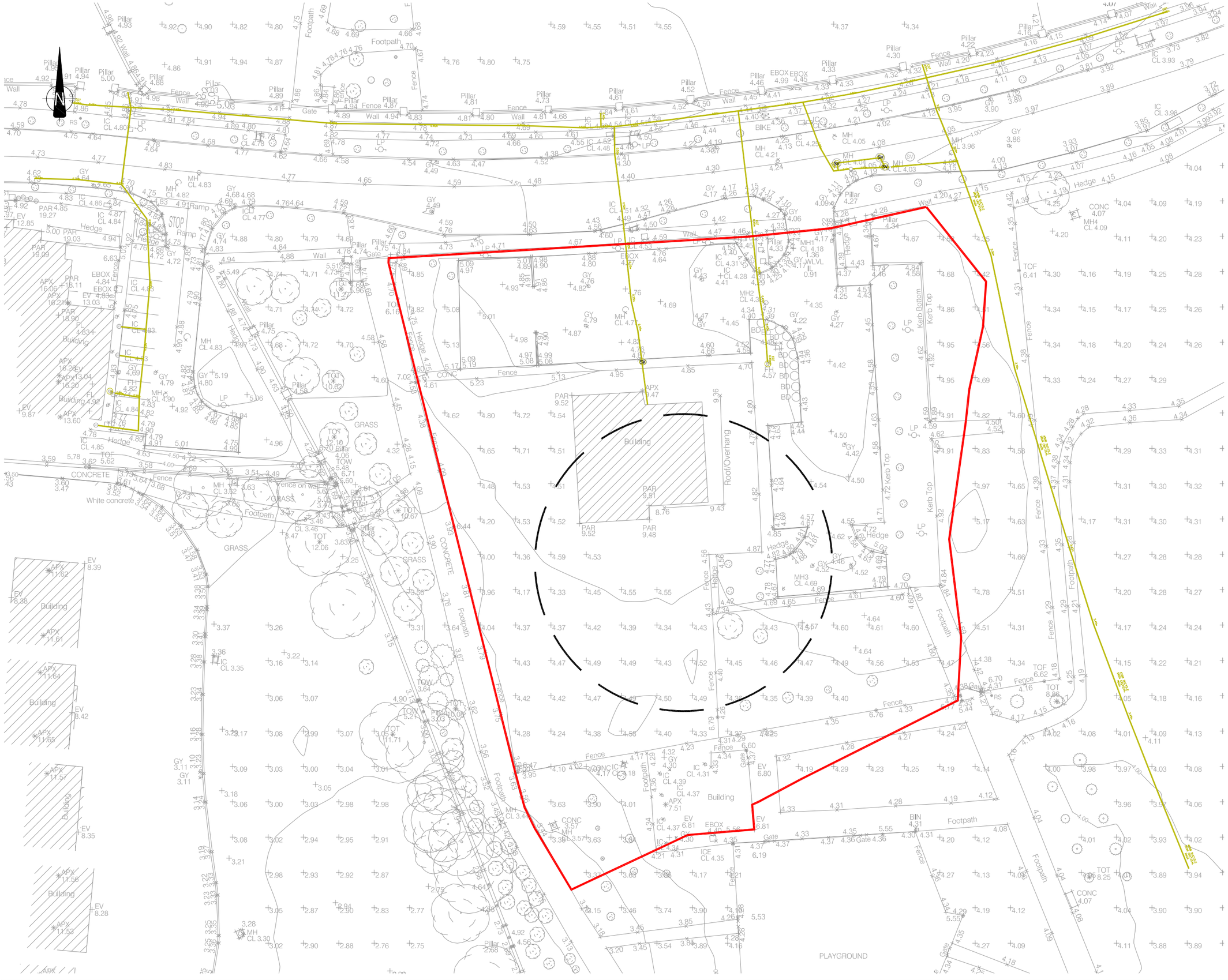

NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ENGINEER'S AND ARCHITECT'S DRAWINGS, SPECIFICATIONS AND DESIGNER'S RISK ASSESSMENTS.
2. ALL LEVELS ARE IN METRES TO ORDNANCE DATUM, MALIN HEAD.
3. THE TOPOGRAPHICAL INFORMATION IS REPLICATED FROM INFORMATION RECEIVED FROM OTHERS AND IS ISSUED AS BACKGROUND INFORMATION ONLY.

LEGEND:

- EXISTING BUILDING
- OUTLINE OF PROPOSED BUILDING
- EXISTING WATERMAIN
- EXISTING HYDRANT
- SITE BOUNDARY

No.	Revision	Date	By	Chk'd	Appr'd
P02	ISSUE FOR INFORMATION	17.04.23	GH	SK	KOR
P01	ISSUE FOR INFORMATION	11.11.22	RE	SK	KOR

Project Stage

FOR PLANNING APPROVAL

ROD ROUGHAN & O'DONOVAN

Offices:
Dublin - Sandyford & Santry
Leeds - Otley
Ireland t +353 (0) 1 294 0800
UK t +44 (0) 113 360 1720

Client: FINGAL COUNTY COUNCIL

Project Title: BALDOYLE COMMUNITY CENTRE

Drawing Title: EXISTNG WATERMAIN LAYOUT

Drawing Number	Rev.
BCC-ROD-00-XX-DR-C-0040	P02

Scale:	Date:	Job No:	Status Code:
1:250 @A1	NOV.'22	21.115.101	S2 - FOR INFORMATION

Drawn:	Checked:	Approved:
RE	SK	KOR

DO NOT SCALE USE FIGURED DIMENSIONS ONLY

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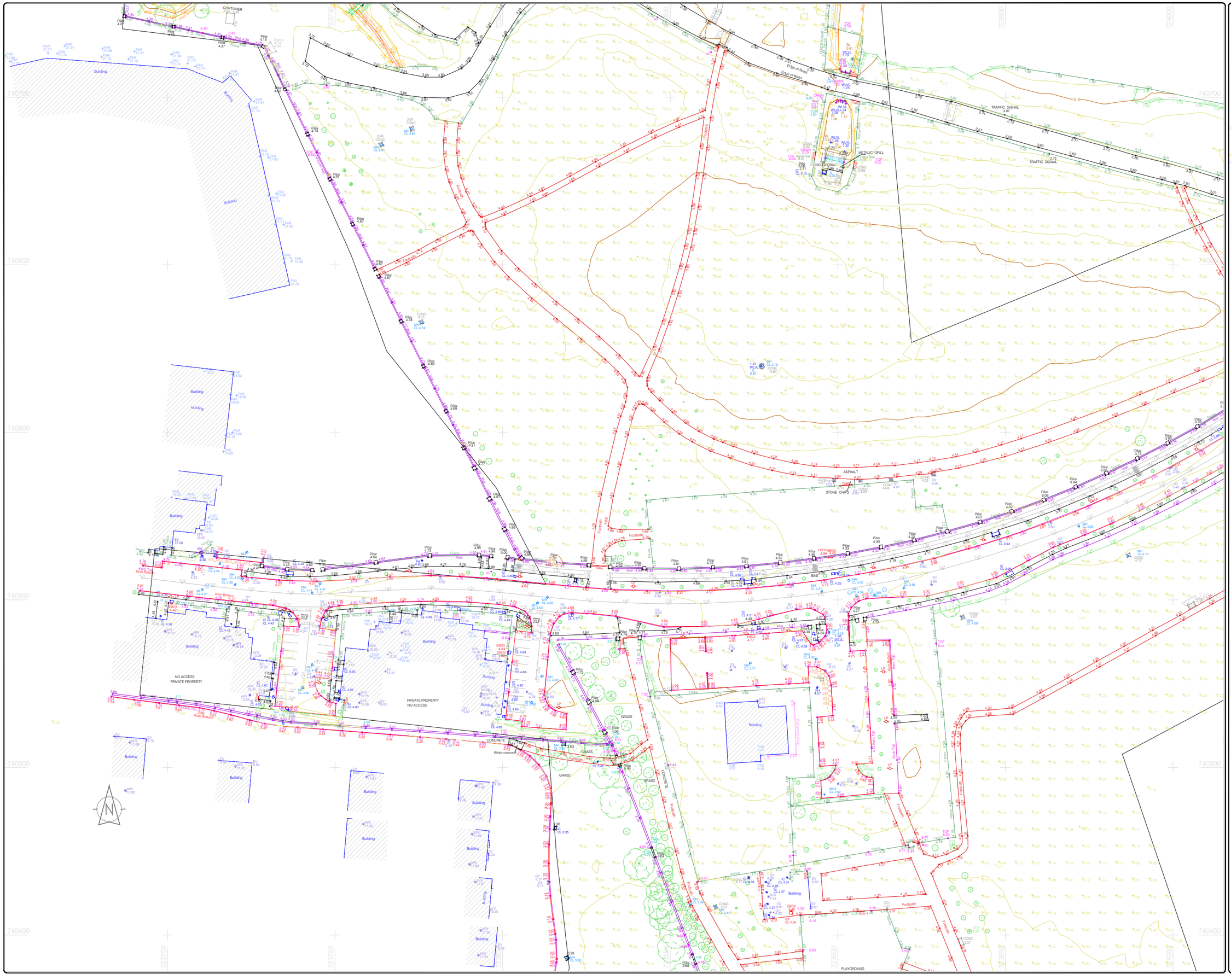
APPENDIX C
TOPOGRAPHICAL & UTILITY SURVEY



LEGEND
Street furniture & Services

Symbol	Feature	Symbol	Feature	Symbol	Feature
5.12	Over Head Wires (LUAS) - Pylon ESB	Sign RS	Road Sign	PBOX	Phone Box
5.12	Flowerbed	BS	Bus Stop		Bench Seat
					Duct
5.12	Pipe	BD	Bollard		Kiosk
				GAS	Gas Cover
5.12	Lift	BEA	Beacon	GY	Gully
				CPBox	C P Box
5.12	Barrier	CH	Coalhole Cover	U/G Vent	U/G Car Park Vent
5.12	Pump	BH	Bore Hole	BIN	Waste Bin
5.12	Trial Pit	EP	Electricity Pole	HY	Hydrant
5.12	Bus/Tram Shelter	TP	Telegraph pole	FH	Fire Hydrant
5.12	Postbox	OCS	OCS Pole	EBOX	ESB Box
V	Valve - General	CP	CCTV Camera Pole	ICE	ESB Inspection Cover
WV	Water Valve	LP	Lamp Post	TFB	Traffic Control Box
GV	Gas Valve	FMH or	Foul Manhole	LUAS	LUAS Technical Cubicle
SV	Sluice Valve	SMH or	Surface Water MH		Ticket Vending Machine
AV	Air Valve	MH or	Manholes	WM	Water Meter Cover
SC	Stop Cock	AC	Air Conditioning Vents	ICT	Telecom Inspection Cover
CPP	C P Post	ICU	Services Inspection Cover		Monument / Toilets
MK	Marker Post	ICTC	Traffic Inspection Cover		Tank Storage
TL	Traffic light	ICTV	Cable TV Inspection Cover		Basement: MH, Cover & Pipe
PM	Parking Meter	ICES	ESAT Inspection Cover	DAM	Dished Aerial Mark
PAM	Plane Aerial Mark	ICNC	NTL Inspection Cover	STAY	Stay for pole
SCV	Smart Card Validator	ICEM	Eircom Inspection Cover	PP	Pipe Protection
UV	Unknown Valve	RE	Rodding Eye	WO	Washout

Natural Features

Symbol	Feature	Symbol	Feature
5.12	Surface Change	WLVL	Water Level
5.12	Land Drain	CRWN	Crown Level
5.12	Bottom of Slope	IL	Invert level
5.12	Top of Slope	BL	Bed Level
5.12	Ditch	S	Spotheight
5.12	Water Edge / Lake / Pond		
	Hedge / Trees Drip Line / Vegetation		
	Tree Coniferous		Tree Deciduous

Golf

Symbol	Feature
FWAY	Fair Way
GREE	Green
TBOX	Tee Box

Other

Symbol	Feature
S1 E: 1000.000 N: 1000.000 H: 100.00	Survey Station
	Photo point
TOT	Top of Tree

Built Features
Roads & Road Markings

Symbol	Feature	Symbol	Feature	Symbol	Feature
5.12	Building	5.12	Fence	FL 0.00	Floor Level
5.12	Edge of Road	Gate	Gate	APX 0.00	Apex Height
5.12	Kerb Bottom	5.12	Road Centreline	EV 0.00	Eaves Height
5.12	Kerb Top	5.12	Top of Wall	PAR 0.00	Parapet Height
5.12	Bridge Abutment	5.12	Hoarding	SOFF 0.00	Soffit Elevation
5.12	Bridge Deck	5.12	Property Line	STPL 5.12	Step Level
5.12	Bridge Parapet	5.12	Road Scar	CONC	Concrete Pad
5.12	Building Façade	5.12	Top of Fence	5.12	Track
5.12	Footpath / Platform Train & Tram	5.12	Wall / Retaining Wall		
5.12	Damp Proof Course / Verge	5.12	Railway / Tram Rail / Grating / Ramp		
5.12	Bridge Pier / Wall & Gate Pillar / LUAS Trackbed	5.12	Building Canopy / Roof / Overhang		
5.12	Cycleway / Private Landing Area				

Murphy Surveys Ltd. Disclaimer

The user or recipient of this survey data understands and acknowledges this data may be inaccurate or contain errors or omissions and the user or recipient assumes full responsibility for any risks or damages resulting from, arising from, or in connection with any use of or reliance upon data displayed herein. Although significant care has been exercised to produce surveys that satisfy survey accuracy standards, these surveys are only as accurate as the source data from which they were compiled. Although all reasonable steps have been taken to locate all features visible at the time of the survey, there is no guarantee that all will be shown on the drawing, as some above ground features may have obstructed the survey. Wherever possible, areas unable to be surveyed will be labelled as "UTS".

The Company shall not be liable for any inaccuracy of the data provided beyond the specified scale or accuracy, or for any matters resulting from their use for purposes other than that stated in the Contract. No liability shall attach to the Surveyor in respect of any consequential loss or damages suffered by the Client.

The Client must promptly notify the Company of any errors in mapping of which it becomes aware. If misleading, inaccurate or otherwise inappropriate information is brought to the Company's attention or the Company itself identifies any such imprecision or error in a survey, it shall use its reasonable endeavours to fix or remove it and if necessary in certain instances, the Company being on notice of any such misleading, inaccurate or otherwise inappropriate information, it will re-conduct the survey and reproduce the data to within the specified scale or accuracy.

Surveyed by : BD, PF, MN   Date: March 2019   Datum : Malin Head
Drawn by : CN   Date: 25.03.2019   Grid System:
Checked by : PK   Date: 26.03.2019   Irish National Grid ☐ ITM(15) ☒

Revisions

No.	Date	Description
0	26.03.2019	First Drawing

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GLOBAL CONSULTING SURVEYORS

Topographic surveys, Measured Building Surveys,
Setting-Out, As-Built Surveys, Hydrographic Surveys, Legal Mapping,
Pipeline Surveys, Services Location, Ground Penetrating Radar,
Laser Scanning, Rectified Photography

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Head Office
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Kilcullen Business Campus
Kilcullen Co. Kildare
Ireland
Phone: (+353) 045 484040
Fax: (+353) 045 484004
Email: info@murphysurveys.ie

Client :
Fingal County Council

Project :
Topographical Survey Racecourse Park

Date : 26.03.2019   **Scale :** 1:500@A1

Description :
Topographical Survey

Drawing Number : **MSL29776_T_ITM_Rev0_09**

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ABBREVIATIONS

PAS128 SURVEY METHODOLOGY KEY

THIS SURVEY HAS BEEN CARRIED OUT IN ACCORDANCE WITH THE PAS128 SPECIFICATION FOR UNDERGROUND UTILITY DETECTION, VERIFICATION & LOCATION. THE SPECIFICATION ALLOWS FOR A RANGE OF TECHNIQUES AND METHODS OF VARYING INTENSITY TO BE DEPLOYED. THE COLOUR CODED SCHEME INDICATES WHERE DIFFERENT SURVEY METHODOLOGIES HAVE BEEN USED ON SITE, AND THE LIST BELOW IDENTIFIES EQUIPMENT USED TO OBTAIN THE SURVEY RESULTS.
NB: PLEASE SEE ACCOMPANYING REPORT FOR FULL DETAILS.

ELECTROMAGNETIC DETECTION	GROUND PENETRATING RADAR	TOTAL STATION	GPS/GNSS
Vivax vLoc 3	IDS Opera Duo		Trimble R8s

- M4P - EML SEARCH TRANSECT AT 2m INTERVALS - TRACED AT 0.5m INTERVALS. GPR SURVEY GRID AT 0.5m INTERVALS OR HIGH DENSITY ARRAY. POST PROCESSING OF GPR DATA.
- M3P - EML SEARCH TRANSECT AT 2m INTERVALS - TRACED AT 1m INTERVALS. GPR SURVEY GRID AT 1m INTERVALS OR HIGH DENSITY ARRAY. POST PROCESSING OF GPR DATA.
- M2P - EML SEARCH TRANSECT AT 5m INTERVALS - TRACED AT 2m INTERVALS. GPR SURVEY GRID AT 2m INTERVALS OR HIGH DENSITY ARRAY. POST PROCESSING OF GPR DATA.
- M1P - EML SEARCH TRANSECT AT 10m INTERVALS - TRACED AT 5m INTERVALS. GPR SURVEY AS APPROPRIATE. POST PROCESSING OF GPR DATA.
- M4 - EML SEARCH TRANSECT AT 2m INTERVALS - TRACED AT 0.5m INTERVALS. GPR SURVEY GRID AT 0.5m INTERVALS. GPR MARK-UP ON SITE
- M3 - EML SEARCH TRANSECT AT 2m INTERVALS - TRACED AT 1m INTERVALS. GPR SURVEY GRID AT 1m INTERVALS. GPR MARK-UP ON SITE.
- M2 - EML SEARCH TRANSECT AT 5m INTERVALS - TRACED AT 2m INTERVALS. GPR SURVEY GRID AT 2m INTERVALS. GPR MARK-UP ON SITE.
- M1 - EML SEARCH TRANSECT AT 10m INTERVALS - TRACED AT 5m INTERVALS. GPR SURVEY AS APPROPRIATE. GPR MARK-UP ON SITE

Rev	Date	Drawn	Description	Chkd	Appd
01	30/11/21	C.D.	SURVEY COMPLETED	K.S.	J.M.

PCA Ltd
Hillcrest House,
Hillcrest Road,
Sandyford, Dublin

01-2136300

Client
ROUGHAN & O'DONOVAN

Title
Baldoyle Community Centre
Utilities Survey
Sheet 1/3

Surveyor	A. Jiminez	A.J.	Eng check		
Drawn	C. Daus	C.J.	Coordination		
Dwg check	K. Sheehan	K.S.	Approved	Mark Mc	

Scale at A0	Status	Rev
1:200@A0	Complete	01

Drawing Number
211109MM

APPENDIX D
IRISH WATER CONNECTION OF FEASIBILITY

Kieran O'Riordan

Arena House,
Arena Road, Sandyford
Dublin 18
Dublin

Uisce Éireann
Bosca OP 448
Oifig Sheachadta na
Cathrach Theas
Cathair Chorcaí

Irish Water
PO Box 448,
South City
Delivery Office,
Cork City.

www.water.ie

1 April 2022

Re: CDS22002354 pre-connection enquiry - Subject to contract | Contract denied

Connection for Business Connection of 1 unit(s) at Baldoyle Racecourse Park, Red Arches Road, Fingal

Dear Sir/Madam,

Irish Water has reviewed your pre-connection enquiry in relation to a Water & Wastewater connection at Baldoyle Racecourse Park, Red Arches Road, Fingal (the **Premises**). Based upon the details you have provided with your pre-connection enquiry and on our desk top analysis of the capacity currently available in the Irish Water network(s) as assessed by Irish Water, we wish to advise you that your proposed connection to the Irish Water network(s) can be facilitated at this moment in time.

SERVICE	**OUTCOME OF PRE-CONNECTION ENQUIRY** **THIS IS NOT A CONNECTION OFFER. YOU MUST APPLY FOR A CONNECTION(S) TO THE IRISH WATER NETWORK(S) IF YOU WISH TO PROCEED.**
Water Connection	Feasible without infrastructure upgrade by Irish Water
Wastewater Connection	Feasible without infrastructure upgrade by Irish Water
SITE SPECIFIC COMMENTS	
Water Connection	
Wastewater Connection	Separate storm and foul water connection services have to be provided for the Development. The surface and storm water from the site must be discharged only into an existing storm water network that does not discharge to an IW combined/foul sewer. The connection arrangement should be agreed with the Local Authority Drainage Division. The customer is responsible for obtaining all necessary consents/permissions required to facilitate any connection works to private infrastructure. The status and capacity of the infrastructure should be verified, prior to any physical connection works.

Stiúrthóirí / Directors: Cathal Marley (Chairman), Niall Gleeson, Eamon Gallen, Yvonne Harris, Brendan Murphy, Gavin O'Driscoll, Maria O'Dwyer
Oifig Chláraithe / Registered Office: Teach Colvill, 24-26 Sráid Thalbóid, Baile Átha Cliath 1, D01 NP86 / Colvill House, 24-26 Talbot Street, Dublin 1 D01 NP86
Is cuideachta ghníomhaíochta ainmnithe atá faoi theorainn scaireanna é Uisce Éireann / Irish Water is a designated activity company, limited by shares.
Uimhir Chláraithe in Éirinn / Registered in Ireland No.: 530363

	The proposed development appears to connect to the Irish Water Network via private land/s. Please be advised that at connection application stage, you have to provide evidence of consent of the Third Party Landowner/s for the connection works to be carried out through these lands.

The design and construction of the Water & Wastewater pipes and related infrastructure to be installed in this development shall comply with the Irish Water Connections and Developer Services Standard Details and Codes of Practice that are available on the Irish Water website. Irish Water reserves the right to supplement these requirements with Codes of Practice and these will be issued with the connection agreement.

The map included below outlines the current Irish Water infrastructure adjacent to your site:

Reproduced from the Ordnance Survey of Ireland by Permission of the Government. License No. 3-3-34

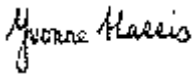
Whilst every care has been taken in its compilation Irish Water gives this information as to the position of its underground network as a general guide only on the strict understanding that it is based on the best available information provided by each Local Authority in Ireland to Irish Water. Irish Water can assume no responsibility for and give no guarantees, undertakings or warranties concerning the accuracy, completeness or up to date nature of the information provided and does not accept any liability whatsoever arising from any errors or omissions. This information should not be relied upon in the event of excavations or any other works being carried out in the vicinity of the Irish Water underground network. The onus is on the parties carrying out excavations or any other works to ensure the exact location of the Irish Water underground network is identified prior to excavations or any other works being carried out. Service connection pipes are not generally shown but their presence should be anticipated.

General Notes:

1) The initial assessment referred to above is carried out taking into account water demand and wastewater discharge volumes and infrastructure details on the date of the assessment. **The availability of capacity may change at any date after this assessment.**
2) This feedback does not constitute a contract in whole or in part to provide a connection to any Irish Water infrastructure. All feasibility assessments are subject to the constraints of the Irish Water Capital Investment Plan.
3) The feedback provided is subject to a Connection Agreement/contract being signed at a later date.
4) A Connection Agreement will be required to commencing the connection works associated with the enquiry this can be applied for at https://www.water.ie/connections/get-connected/
5) A Connection Agreement cannot be issued until all statutory approvals are successfully in place.
6) Irish Water Connection Policy/ Charges can be found at https://www.water.ie/connections/information/connection-charges/
7) Please note the Confirmation of Feasibility does not extend to your fire flow requirements.
8) Irish Water is not responsible for the management or disposal of storm water or ground waters. You are advised to contact the relevant Local Authority to discuss the management or disposal of proposed storm water or ground water discharges
9) To access Irish Water Maps email datarequests@water.ie
10) All works to the Irish Water infrastructure, including works in the Public Space, shall have to be carried out by Irish Water.

If you have any further questions, please contact Kevin McManmon from the design team at kmcmanmon@water.ie For further information, visit **www.water.ie/connections.**

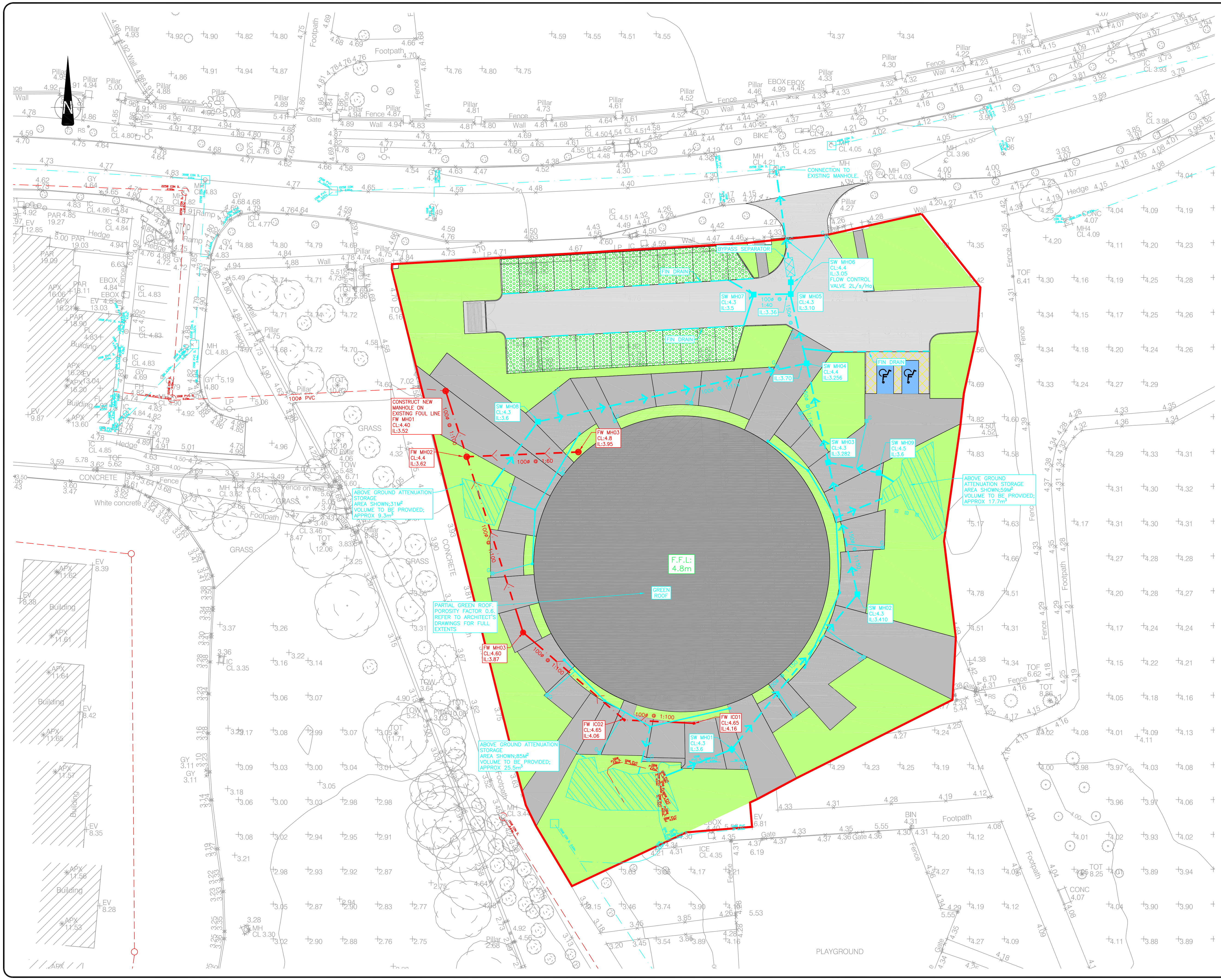
Yours sincerely,



Yvonne Harris

Head of Customer Operations

APPENDIX E
PROPOSED DRAINAGE LAYOUT



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NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ENGINEER'S AND ARCHITECT'S DRAWINGS, SPECIFICATIONS AND DESIGNER'S RISK ASSESSMENTS.
2. ALL LEVELS ARE IN METRES TO ORDNANCE DATUM, MALIN HEAD.
3. THE TOPOGRAPHICAL INFORMATION IS REPLICATED FROM INFORMATION RECEIVED FROM OTHERS AND IS ISSUED AS BACKGROUND INFORMATION ONLY.

LEGEND:

- SITE BOUNDARY
- EXISTING BUILDING
- PROPOSED BUILDING
- LANDSCAPE (REFER TO ARCHITECT'S DRAWINGS FOR DETAILS)
- PROPOSED ROAD
- PROPOSED PAVEMENT
- PERMEABLE PAVING
- EXISTING SURFACE WATER SEWER
- EXISTING FOUL WATER SEWER
- PROPOSED SURFACE WATER SEWER/DRAIN WITH MANHOLE
- PROPOSED FOUL WATER SEWER/DRAIN WITH MANHOLE
- PROPOSED FOUL WATER SEWER/DRAIN WITH AJ
- PROPOSED SURFACE WATER SEWER/DRAIN WITH AJ
- PROPOSED FILTER DRAIN
- PROPOSED GULLY
- F.F.L. XX.XX PROPOSED FINISH FLOOR LEVEL

No.	Revision	Date	By	Chk'd	App'd
P04	ISSUE FOR INFORMATION	17.04.23	GH	SK	KOR
P03	ISSUE FOR INFORMATION	05.01.23	LW	SK	KOR
P02	ISSUE FOR INFORMATION	14.12.22	LW	SK	KOR
P01	ISSUE FOR INFORMATION	11.11.22	RE	SK	KOR

Project Stage
FOR PLANNING APPROVAL

ROD ROUGHAN & O'DONOVAN

Offices:
Dublin - Sandyford & Santry
Leeds - Otley
Ireland t +353 (0) 1 294 0800
UK t +44 (0) 113 360 1720

Client: FINGAL COUNTY COUNCIL

Project Title: BALDOYLE COMMUNITY CENTRE

Drawing Title: PROPOSED DRAINAGE LAYOUT

Drawing Number: BCC-ROD-00-XX-DR-C-0031 | Rev: P04

Scale: 1:250 @A1 | Date: NOV' 22 | Job No: 21.115.101 | Status Code: S2 - SUITABLE FOR INFORMATION

Drawn: RE | Checked: SK | Approved: KOR

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APPENDIX F
PROPOSED WATERMAIN LAYOUT

NEW BOUNDARY BOX TO IRISH WATER SPEC

EXISTING HYDRANT TO REMAIN. TO BE ADJUSTED TO NEW PROPOSED LEVELS.

NOTES:

1. THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT ENGINEER'S AND ARCHITECT'S DRAWINGS AND SPECIFICATIONS
2. ALL LEVELS ARE IN METRES TO ORDNANCE DATUM, MALIN HEAD.
3. POSITION OF EXISTING WATERMAIN TO BE CONFIRMED PRIOR TO LAYING OF NEW WATERMAIN.
4. ALL SERVICE PIPES TO M&E SPEC AND DETAIL CONNECTED TO WATERMAIN IN ACCORDANCE WITH IRISH WATER REQUIREMENTS.
5. ALL WATERMAINS AND ASSOCIATED FITTINGS TO BE CONSTRUCTED IN ACCORDANCE WITH IRISH WATER PUBLICATION "WATER INFRASTRUCTURE STANDARD DETAILS, DOCUMENT NUMBER: IW-CDS-5020-01 AND "CODE OF PRACTICE FOR WATER INFRASTRUCTURE" DOCUMENT NUMBER IW-CDS-5020-03
6. NEW WATERMAINS ARE TO BE INSTALLED WITH A MINMUM COVER OF 900mm IN ACCORDANCE WITH THE IRISH WATER DETAIL STD-W-013 (SEE NOTE 5.)
7. ALL SLUICE VALVE AND HYDRANT CHAMBERS ARE TO BE CONSTRUCTED FROM BLOCKWORK
8. ALL MARKER POST AND PLATES ARE TO BE IN ACCORDANCE WITH IRISH WATER DETAIL STD-W-27 (SEE NOTE 5.)
9. ALL THRUST BLOCKS ARE TO BE IN ACCORDANCE WITH IRISH WATER DETAIL STD-W-28 (SEE NOTE 5.)
10. ALL SLUICE VALES TO BE IN ACCORDANCE WITH THE REQUIREMENTS CALLED UP ON IRISH WATER DETAIL STD-W-15 (SEE NOTE 5.)
11. ALL HYDRANT TO BE IN ACCORDANCE WITH THE REQUIREMENTS CALLED UP ON IRISH WATER DETAIL STD-W-18 (SEE NOTE 5.)
12. All WATER METER ACCESS POINTS REQUIRE MARKER POST & PLATES TO STD-W-27-REV2 TYPICAL.

LEGEND:

- EXISTING BUILDING
- PROPOSED BUILDING
- LANDSCAPE (REFER TO ARCHITECT'S DRAWINGS FOR DETAILS)
- PROPOSED ROAD
- PROPOSED PAVEMENT
- GRASSCRETE PAVING
- EXISTING WATERMAIN
- EXISTING HYDRANT
- EXISTING SLUICE VALVE
- EXISTING AIR VALVE
- PROPOSED WATERMAIN
- PROPOSED HYDRANT
- PROPOSED SLUICE VALVE
- SITE BOUNDARY
- F.F.L: XX.XX — PROPOSED FINISH FLOOR LEVEL

No.	Revision	Date	By	Chk'd	App'd
P04	ISSUE FOR INFORMATION	17.04.23	GH	SK	KOR
P03	ISSUE FOR INFORMATION	05.01.23	LW	SK	KOR
P02	ISSUE FOR INFORMATION	14.12.22	LW	SK	KOR
P01	ISSUE FOR INFORMATION	11.11.22	RE	SK	KOR

Project Stage: FOR PLANNING APPROVAL

ROD ROUGHAN & O'DONOVAN

Offices:
Dublin - Sandyford & Santry
Leeds - Otley
Ireland t +353 (0) 1 294 0800
UK t +44 (0) 113 360 1720

Client: FINGAL COUNTY COUNCIL

Project Title: BALDOYLE COMMUNITY CENTRE

Drawing Title: PROPOSED WATERMAIN LAYOUT

Drawing Number			Rev.
BCC-ROD-00-XX-DR-C-0041			P04
Scale: 1:250 @A1	Date: NOV.22	Job No: 21.115.101	Status Code: S2 - SUITABLE FOR INFORMATION
Drawn: RE / Checked: SK	Approved: KOR		

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APPENDIX G
SURFACE WATER CALCULATIONS

Arena House
Arena Road
Sandyford Dublin 18

Date 31/01/2022 12:49 | Designed by Sean.Kennedy
File 21.115.101 Baldoyle MD_SK 22.01.26.MDX | Checked by
Micro Drainage | Network 2019.1

Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
IC01	4.375	0.725	Open Manhole	1200	1.000	3.650	100				
01	4.300	0.700	Open Manhole	1200	1.001	3.600	150	1.000	3.600	100	
02	4.300	0.890	Open Manhole	1200	1.002	3.410	150	1.001	3.410	150	
4	4.300	1.018	Open Manhole	1200	2.000	3.282	150				
09	4.500	1.244	Open Manhole	1200	2.001	3.600	100	2.000	3.256	150	
03	4.300	1.018	Open Manhole	1200	1.003	3.282	100	1.002	3.282	150	
								2.001	3.282	100	
IC02	4.375	0.725	Open Manhole	1200	3.000	3.650	100				
08	4.300	0.700	Open Manhole	1200	3.001	3.600	100	3.000	3.600	100	
04	4.400	1.144	Open Manhole	1200	1.004	3.256	150	1.003	3.256	100	
								3.001	3.256	100	
07	4.300	0.800	Open Manhole	1200	4.000	3.500	150				
05	4.300	1.200	Open Manhole	1200	1.005	3.100	150	1.004	3.100	150	
								4.000	3.100	150	
06	4.400	1.350	Open Manhole	1200	1.006	3.050	100	1.005	3.050	150	
	4.300	1.531	Open Manhole	0		OUTFALL		1.006	2.769	100	

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Manhole Schedules for Storm

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
IC01	723878.401	740476.785	723878.401	740476.785	Required	
01	723884.772	740471.556	723884.772	740471.556	Required	
02	723905.148	740491.511	723905.148	740491.511	Required	
4	723910.172	740504.791	723910.172	740504.791	Required	
09	723910.056	740508.727	723910.056	740508.727	Required	
03	723902.083	740510.445	723902.083	740510.445	Required	
IC02	723861.391	740507.860	723861.391	740507.860	Required	
08	723861.150	740516.275	723861.150	740516.275	Required	

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Manhole Schedules for Storm

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
04	723899.739	740524.510	723899.739	740524.510	Required	
07	723892.131	740534.386	723892.131	740534.386	Required	
05	723897.455	740534.427	723897.455	740534.427	Required	
06	723897.575	740538.575	723897.575	740538.575	Required	
	723895.291	740552.459			No Entry	

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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	o	100	IC01	4.375	3.650	0.625	Open Manhole	1200
1.001	o	150	01	4.300	3.600	0.550	Open Manhole	1200
1.002	o	150	02	4.300	3.410	0.740	Open Manhole	1200
2.000	o	150	4	4.300	3.282	0.868	Open Manhole	1200
2.001	o	100	09	4.500	3.600	0.800	Open Manhole	1200
1.003	o	100	03	4.300	3.282	0.918	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	8.242	164.8	01	4.300	3.600	0.600	Open Manhole	1200
1.001	28.520	150.1	02	4.300	3.410	0.740	Open Manhole	1200
1.002	19.180	149.8	03	4.300	3.282	0.868	Open Manhole	1200
2.000	3.938	150.0	09	4.500	3.256	1.094	Open Manhole	1200
2.001	8.156	25.6	03	4.300	3.282	0.918	Open Manhole	1200
1.003	14.259	548.4	04	4.400	3.256	1.044	Open Manhole	1200

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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
3.000	o	100	IC02	4.375	3.650	0.625	Open Manhole	1200
3.001	o	100	08	4.300	3.600	0.600	Open Manhole	1200
1.004	o	150	04	4.400	3.256	0.994	Open Manhole	1200
4.000	o	150	07	4.300	3.500	0.650	Open Manhole	1200
1.005	o	150	05	4.300	3.100	1.050	Open Manhole	1200
1.006	o	100	06	4.400	3.050	1.250	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
3.000	8.418	168.4	08	4.300	3.600	0.600	Open Manhole	1200
3.001	39.457	114.7	04	4.400	3.256	1.044	Open Manhole	1200
1.004	10.177	65.2	05	4.300	3.100	1.050	Open Manhole	1200
4.000	5.323	13.3	05	4.300	3.100	1.050	Open Manhole	1200
1.005	4.149	83.0	06	4.400	3.050	1.200	Open Manhole	1200
1.006	14.071	50.0		4.300	2.769	1.431	Open Manhole	0

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Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.006		4.300	2.769	0.000	0	0

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Manhole Headloss Coeff (Global)	0.500	Inlet Coeffiecient	0.800
Areal Reduction Factor	1.000	Foul Sewage per hectare (l/s)	0.000	Flow per Person per Day (l/per/day)	0.000
Hot Start (mins)	0	Additional Flow - % of Total Flow	0.000	Run Time (mins)	60
Hot Start Level (mm)	0	MADD Factor * 10m³/ha Storage	2.000	Output Interval (mins)	1

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 4 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	M5-60 (mm)	16.200	Cv (Summer)	0.750
Return Period (years)	100	Ratio R	0.300	Cv (Winter)	0.840
Region	Scotland and Ireland	Profile Type	Summer	Storm Duration (mins)	30

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Online Controls for Storm

Hydro-Brake® Optimum Manhole: 06, DS/PN: 1.006, Volume (m³): 1.6

Unit Reference	MD-SHE-0069-2000-0900-2000	Sump Available	Yes
Design Head (m)	0.900	Diameter (mm)	69
Design Flow (l/s)	2.0	Invert Level (m)	3.050
Flush-Flo™	Calculated	Minimum Outlet Pipe Diameter (mm)	100
Objective	Minimise upstream storage	Suggested Manhole Diameter (mm)	1200
Application	Surface		

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.900	2.0	Kick-Flo®	0.568	1.6
Flush-Flo™	0.278	2.0	Mean Flow over Head Range	-	1.8

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	1.7	0.600	1.7	1.600	2.6	2.600	3.2	5.000	4.4	7.500	5.3
0.200	2.0	0.800	1.9	1.800	2.7	3.000	3.5	5.500	4.6	8.000	5.5
0.300	2.0	1.000	2.1	2.000	2.9	3.500	3.7	6.000	4.8	8.500	5.7
0.400	1.9	1.200	2.3	2.200	3.0	4.000	4.0	6.500	5.0	9.000	5.8
0.500	1.8	1.400	2.4	2.400	3.1	4.500	4.2	7.000	5.2	9.500	6.0

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Storage Structures for Storm

Tank or Pond Manhole: IC01, DS/PN: 1.000

Invert Level (m) 3.650

Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	35.0	0.300	35.0

Tank or Pond Manhole: 4, DS/PN: 2.000

Invert Level (m) 3.282

Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	234.0	0.250	234.0

Tank or Pond Manhole: IC02, DS/PN: 3.000

Invert Level (m) 3.650

Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	45.0	0.300	45.0

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Porous Car Park Manhole: 07, DS/PN: 4.000

Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.30	Slope (1:X)	0.0
Membrane Percolation (mm/hr)	1000	Invert Level (m)	3.500	Depression Storage (mm)	5
Max Percolation (l/s)	111.1	Width (m)	10.0	Evaporation (mm/day)	3
Safety Factor	2.0	Length (m)	40.0	Membrane Depth (mm)	0

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Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Manhole Headloss Coeff (Global) 0.500 MADD Factor * 10m³/ha Storage 2.000
Hot Start (mins) 0 Foul Sewage per hectare (l/s) 0.000 Inlet Coeffiecient 0.800
Hot Start Level (mm) 0 Additional Flow - % of Total Flow 0.000 Flow per Person per Day (l/per/day) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 4 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 16.200 Cv (Summer) 0.750
Region Scotland and Ireland Ratio R 0.300 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status ON
Analysis Timestep 2.5 Second Increment (Extended) Inertia Status ON
DTS Status ON

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 20, 20

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status
1.000	IC01	60 Winter	100	+20%					3.746	-0.004	0.000	0.59		2.5	OK

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Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Level Exceeded
1.000	IC01	

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Arena House
Arena Road
Sandyford Dublin 18

Date 31/01/2022 12:49 | Designed by Sean.Kennedy
File 21.115.101 Baldoyle MD_SK 22.01.26.MDX | Checked by
Micro Drainage | Network 2019.1

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)
1.001	01	60 Winter	100	+20%					3.728	-0.022	0.000	0.20		2.7
1.002	02	60 Winter	100	+20%	30/15 Summer				3.712	0.152	0.000	0.20		2.7
2.000	4	10080 Winter	100	+20%	30/2880 Winter				3.484	0.052	0.000	0.05		0.6
2.001	09	10080 Winter	100	+20%					3.501	-0.199	0.000	0.00		0.0
1.003	03	60 Winter	100	+20%	1/120 Winter				3.699	0.317	0.000	0.91		2.2
3.000	IC02	60 Winter	100	+20%	100/60 Winter				3.753	0.003	0.000	0.54		2.3
3.001	08	60 Winter	100	+20%	30/30 Winter				3.736	0.036	0.000	0.41		2.3
1.004	04	180 Winter	100	+20%	30/15 Summer				3.690	0.284	0.000	0.22		4.3
4.000	07	180 Winter	100	+20%	100/120 Summer				3.682	0.032	0.000	0.05		2.0
1.005	05	180 Winter	100	+20%	1/60 Winter				3.686	0.436	0.000	0.17		2.4
1.006	06	360 Winter	100	+20%	1/15 Summer				3.700	0.550	0.000	0.24		1.9

PN	US/MH Name	Status	Level Exceeded
1.001	01	OK	
1.002	02	SURCHARGED	
2.000	4	SURCHARGED	
2.001	09	OK	
1.003	03	SURCHARGED	
3.000	IC02	SURCHARGED	
3.001	08	SURCHARGED	
1.004	04	SURCHARGED	

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Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Status	Level Exceeded
4.000	07	SURCHARGED	
1.005	05	SURCHARGED	
1.006	06	SURCHARGED	

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APPENDIX H
OPW & MCCLOY CONSULTING FLOOD RISK MAPPING

Tidal flooding may also occur within area shown on this map.
Please refer to the tidal flood extent map. Figure No. MAY/HPW/EXT/CURS/T/003

1Mab2028

1Mac743D

1Ma2273

1Maa675

SAINTDOOLAGHS
Clochar Dúiligh

DRUMNIGH
Droimnigh
Droimnigh

SNUGBOROUGH
Snugborough

MAYNETOWN
An Mhaighean

BALGRIFFIN PARK
Páirc Bhaile Ghrífín

GRANGE
An Ghráinseach

STAPOLIN
Steach Poilín

STAPOLIN
Steach Poilín

Node Label	Water Level (mOD) 10% AEP	Flow (m3/s) 10% AEP	Water Level (mOD) 1% AEP	Flow (m3/s) 1% AEP	Water Level (mOD) 0.1% AEP	Flow (m3/s) 0.1% AEP
1Ma2273	11.79	8.56	11.97	13.89	12.17	21.34
1Maa675	2.50	0.43	2.85	0.68	3.46	1.05
1Mab2028	12.62	0.47	12.82	0.87	13.10	1.55
1Mac743D	16.80	5.02	17.13	9.87	17.35	18.35

321500 322000 322500 323000 323500 324000 324500

242500 242000 241500 241000 240500

250 0 250 500 750 1000 Meters

Location Plan:

LEGEND

- AFA Boundary
- Defended Area
- Modelled River Centreline
- Node Point
- 10% AEP Fluvial Extent (High Risk)
- 1% AEP Fluvial Extent (Medium Risk)
- 0.1% AEP Fluvial Extent (Low Risk)
- Flood Defence - Embankment
- Flood Defence - Wall
- Gate
- NODE123 — Node Label
- x.x% AEP — Standard of Protection of Flood Defence

IMPORTANT USER NOTE:
THE VIEWER OF THIS MAP SHOULD REFER TO THE DISCLAIMER, GUIDANCE NOTES AND CONDITIONS OF USE THAT ACCOMPANY THIS MAP.

The Office of Public Works
Jonathan Swift Street
Trim
Co. Meath

Project:
FINGAL EAST MEATH FRAM STUDY

Map: **Mayne Model**
FLUVIAL FLOOD EXTENT MAP

Map Type:	EXTENT		
Source:	FLUVIAL		
Map Area:	HPW		
Scenario:	CURRENT		
Drawn by:	IH	Date:	Nov - 2017
Checked by:	JM	Date:	Nov - 2017
Approved by:	JM	Date:	Nov - 2017

Map No.:
MAY/HPW/EXT/CURS/003

Revision: F1

Map Scale: 1:10,000 Plot Scale: 1:1 @ A3

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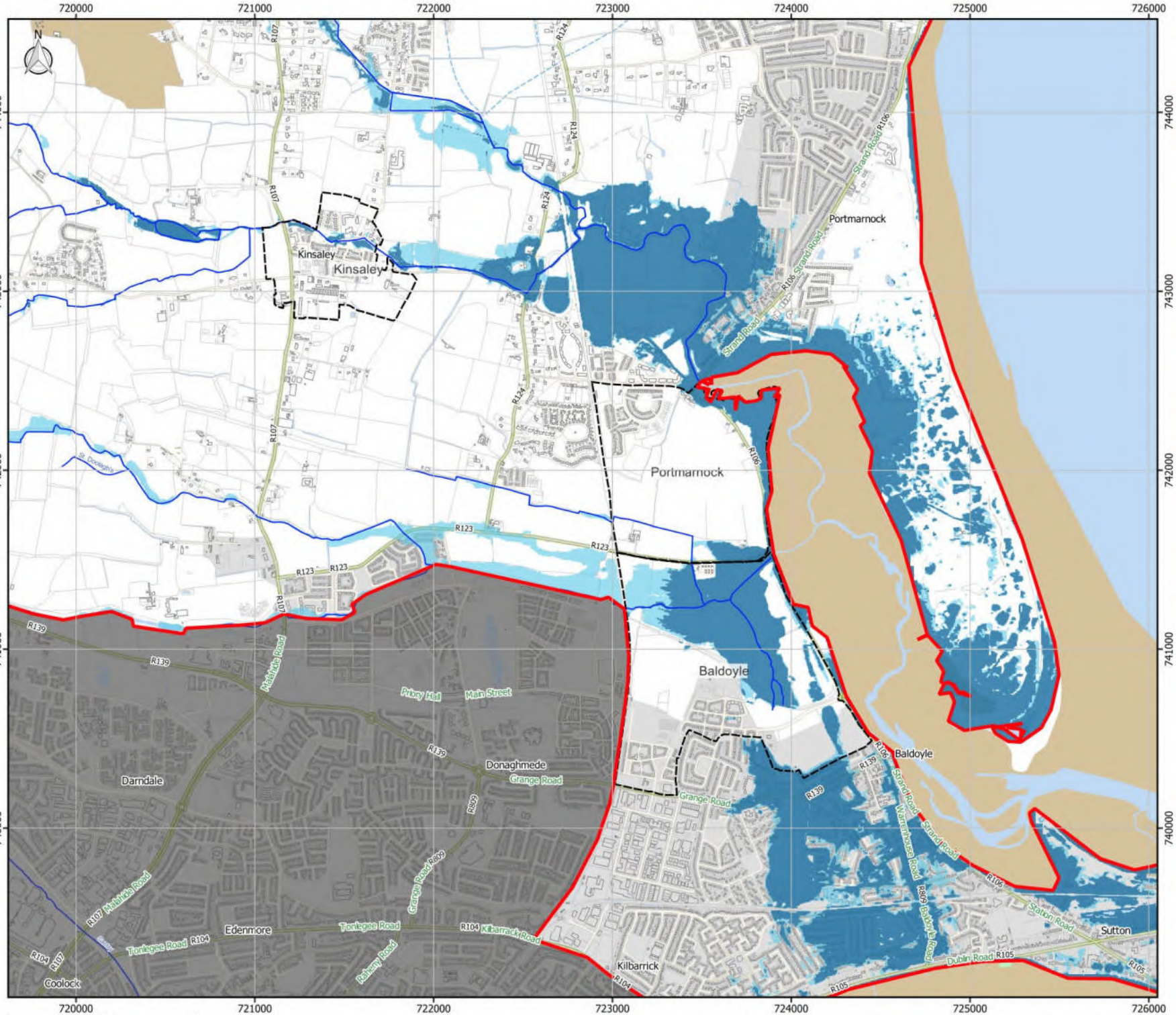

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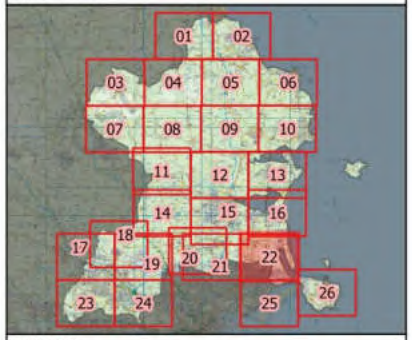
KEY PLAN



LEGEND

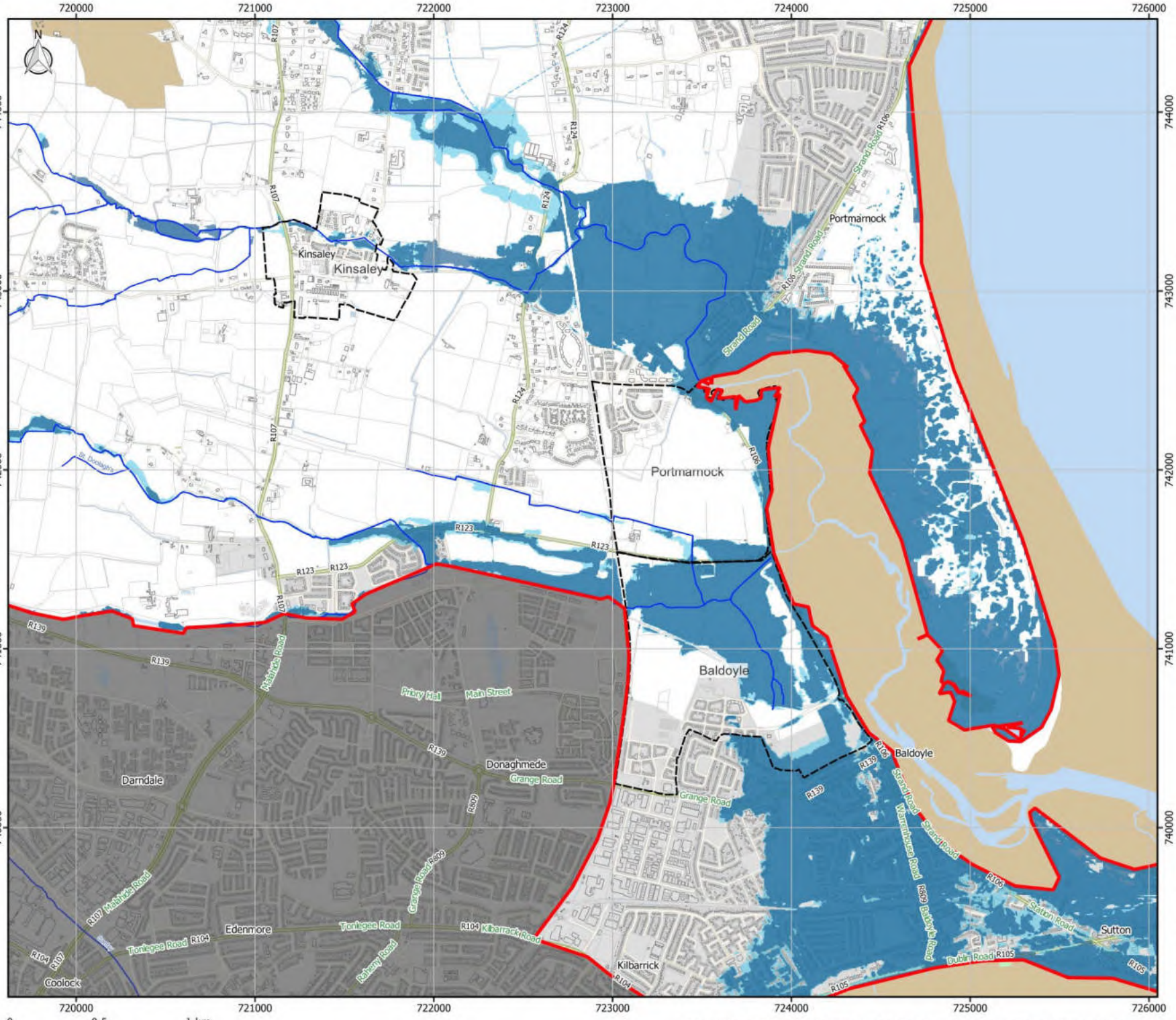
- Fingal County Administrative Boundary
- Watercourses
- LAP & Masterplan Boundaries
- Flood Zone A
- Flood Zone B
- Defended Areas

REV:	NOTE:	DATE:
04	FOR INFORMATION	10/11/2022

Comhairle Contae Fhine Gall
Fingal County Council

McCloy Consulting
Unit 12, The Beat Centre, Stephenstown Industrial Estate, Balbriggan, Co. Dublin
T: +353 (0)1 5138963
E: info@mccloyconsulting.ie
W: www.mccloyconsulting.ie

MAP:	FLOOD ZONE MAP	
FLOOD PROBABILITY:	FLUVIAL: 1% / 0.1%	COASTAL: 0.5% / 0.1%
SOURCE CRS:		ITM EPSG:2157
DRAWN BY:	DL	DATE: 10/11/2022
CHECKED BY:	PS	DATE: 10/11/2022
APPROVED BY:	DKS	DATE: 10/11/2022
DRAWING NUMBER:	M02127-06_FIG_FL122	
MAP SERIES:		PAGE 22 OF 26
DRAWING SCALE:		1:20000 @ A3



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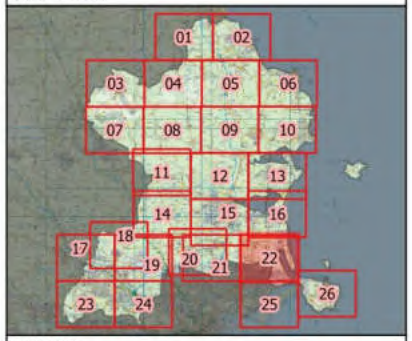
KEY PLAN



LEGEND

- Fingal County Administrative Boundary
- Watercourses
- LAP & Masterplan Boundaries
- 1% / 0.5% AEP MRFS Flood Extent
- 0.1% AEP MRFS Flood Extent
- No Climate Change Data Available; Present Day Flood Data Only.CC Flood Risk Subject to Site Specific Assessment

REV:	NOTE:	DATE:
04	FOR INFORMATION	10/11/2022

Comhairle Contae Fhine Gall
Fingal County Council

McCloy Consulting
Unit 12, The Beat Centre, Stephenstown Industrial Estate, Balbriggan, Co. Dublin
T: +353 (0)1 5138963
E: info@mccloyconsulting.ie
W: www.mccloyconsulting.ie

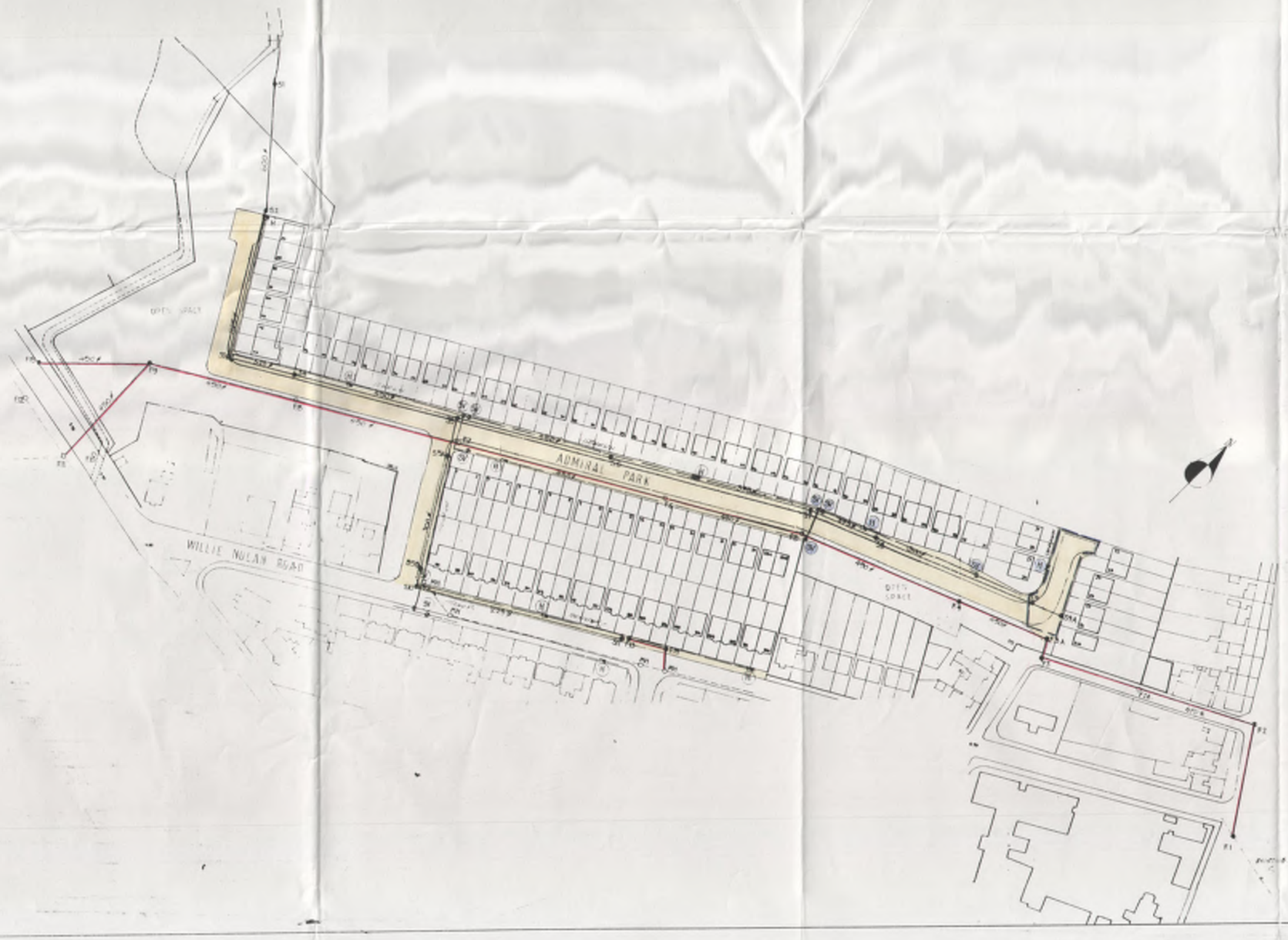
MAP: MID RANGE FUTURE SCENARIO FLOOD EXTENT

FLOOD PROBABILITY:
FLUVIAL: 1% / 0.1% COASTAL: 0.5% / 0.1%

SOURCE CRS:		ITM EPSG:2157
DRAWN BY:	DL	DATE: 10/11/2022
CHECKED BY:	PS	DATE: 10/11/2022
APPROVED BY:	DKS	DATE: 10/11/2022
DRAWING NUMBER:	M02127-06_FIG_FL222	
MAP SERIES:		PAGE 22 OF 26
DRAWING SCALE:		1:20000 @ A3

APPENDIX I
FINGAL COUNTY COUNCIL TAKING-IN-CHARGE DRAWINGS

SITE LOCATION MAP SCALE 1 20000



MANHOLE No.	COVER LEVEL	INVERT LEVEL	MANHOLE No.	COVER LEVEL	INVERT LEVEL
F1	8.19	[illegible]	51	5.00	1.57
F2	6.20	0.80	52	5.12	3.23
F2A	5.93	0.58	53	5.20	3.78
F3	6.70	1.00	54	5.25	3.84
F3A	6.37	1.13	55	5.18	4.02
F4	6.59	1.29	55A	5.21	4.22
F5	5.70	1.47	55B	5.12	4.64
F6	5.32	1.63	56	5.25	4.27
F7	5.21	1.83	57	5.23	4.56
F8	5.18	1.99	58	6.00	4.78
F9	4.85	2.16	59	6.24	4.96
F10	4.99		59A	6.69	4.89
F11			510	5.35	4.52
F12			511	5.63	4.90
F13	5.30	4.28			
F14	5.78	4.78			
F15	4.28	2.24			

REVISIONS

THIS DRAWING DOES NOT CONSTITUTE A RECOMMENDATION TO HAVE THE ESTATE TAKEN IN CHARGE / INTO MAINTENANCE

FOR INFORMATION ON SAME SEE LETTER DATED: _____

THIS MAP REFERS TO THE TAKING INTO MAINTENANCE ONLY OF THOSE ROADS & SERVICES AS INDICATED IN COLOUR.

County Engineer.
D. G. O'CONNOR, B.A., B.A.I., C.Eng., F.I.E.I.

Date 24/4/96	Surveyed By	NOTE ALL FOUL AND SURFACE WATER SEWERS ARE 225mm dia. UNLESS OTHERWISE STATED.
Checked By	Drawn By	
Date 28 APR 1996	B.C.No. 1052.	SCALE DIMENSIONS NOT TO BE USED. LENGTH OF ROADS ARE AS ON THE ATTACHED ROAD SCHEDULE
	Scale 1:1000.	
	O.S. Ref No. 3134-6.	

Comhairle Chontae Fhine Gall

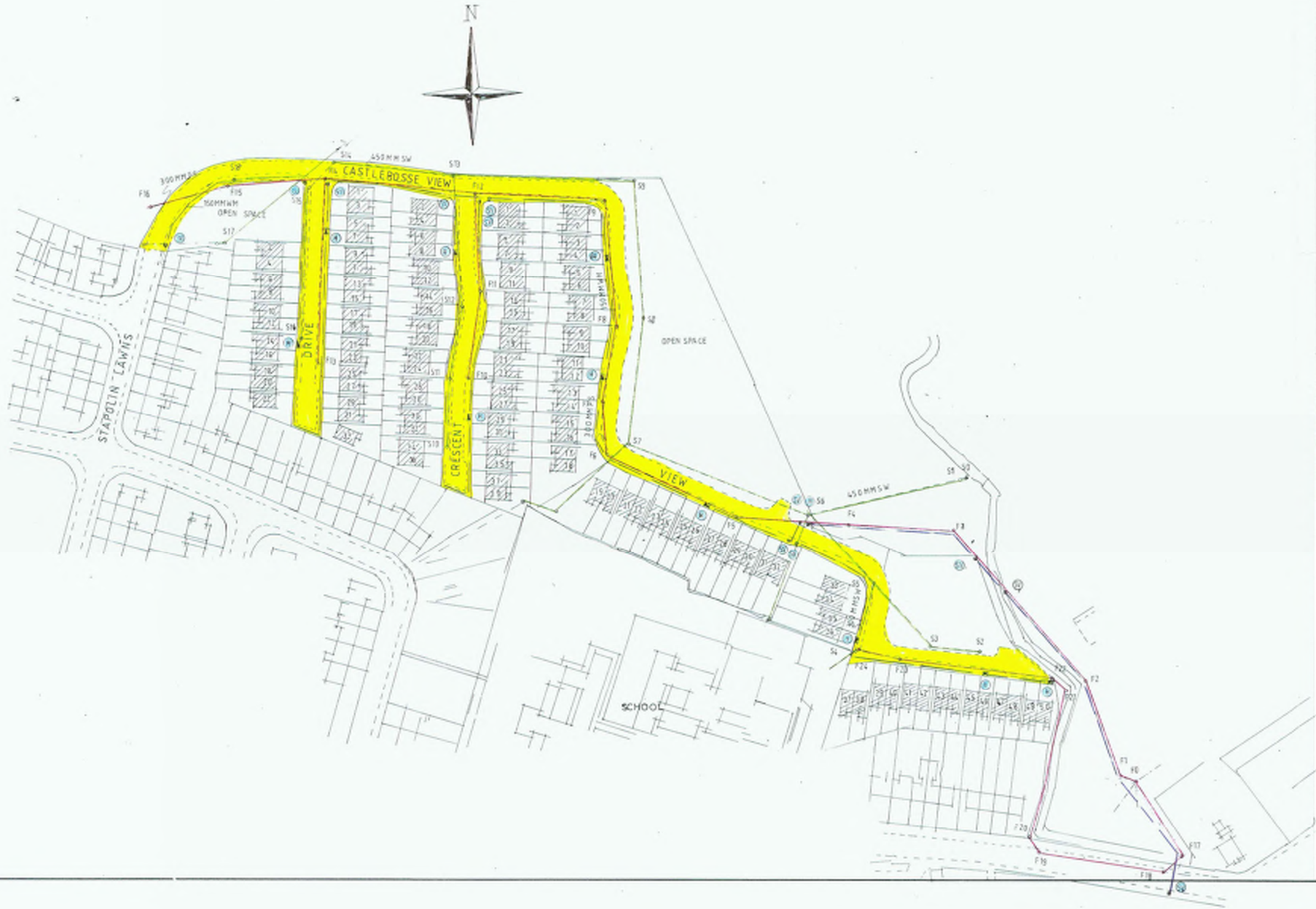
Fingal County Council

BUILDING AND DEVELOPMENT CONTROL

ADMIRAL PARK

BALDOYLE

Foul sewer — Red
Surface water — Green
Watermain — Blue
Hydrants — Sluice valves



FOUL SEWER

SURFACE WATER

MANHOLE No.	COVER LEVEL	INVERT LEVEL	PIPE DIAMETER	MANHOLE No.	COVER LEVEL	INVERT LEVEL	PIPE DIAMETER
F0	2·17	-0·33		S0	2·80	0·70	
F1	2·31	-0·26		S1	2·68	0·91	
F2	2·20			S2	2·76	1·81	
F3	2·27	0·15		S3	2·81	1·65	
F4	2·47	0·28		S4	3·01	1·59	
F5	2·94	0·41		S5	2·47	1·29	
F6	3·18	0·57		S6	2·82	0·99	
F7	3·25	0·65		S7	3·15	1·30	
F8	3·40	0·77		S8	3·31	1·50	
F9	3·17	1·04		S9	3·64	1·83	
F10	3·50	2·02		S10			
F11	3·17	1·75		S11	3·51	2·31	
F12	3·34	1·31		S12	3·23	2·21	
F13	4·22	2·82		S13	3·56	2·08	
F14	3·56	1·53		S14	3·55	2·33	
F15	4·03	1·74		S15	3·68	2·38	
F16	4·76	1·95		S16	4·10	2·75	

FCC-TD-TP-TIC 433
BC NO. 1256
ESTATE: Castlerosse Baldoyle (Phase 1+2)

REVISIONS

THIS DRAWING DOES NOT CONSTITUTE A RECOMMENDATION TO HAVE THE ESTATE TAKEN IN CHARGE/INTO MAINTENANCE

FOR INFORMATION ON SAME SEE LETTER DATED ____________

THIS MAP REFERS TO THE TAKING INTO MAINTENANCE ONLY OF THOSE ROADS & SERVICES AS INDICATED IN COLOUR.

Date	Surveyed By A FLYNN	NOTE
Checked By	Drawn By A FLYNN	ALL FOUL AND SURFACE WATER SEWERS ARE 225mm DIA. UNLESS OTHERWISE STATED.
Date	B C No. 1256	SCALE DIMENSIONS NOT TO BE USED.
	Scale 1:1000	LENGTH OF ROADS ARE AS ON THE ATTACHED ROAD SCHEDULE.
	O.S. Ref. No. 3133 B	WATER MAIN 100mm UNLESS OTHERWISE STATED.

Comhairle Chontae Fhine Gall

Fingal County Council

BUILDING AND DEVELOPMENT CONTROL

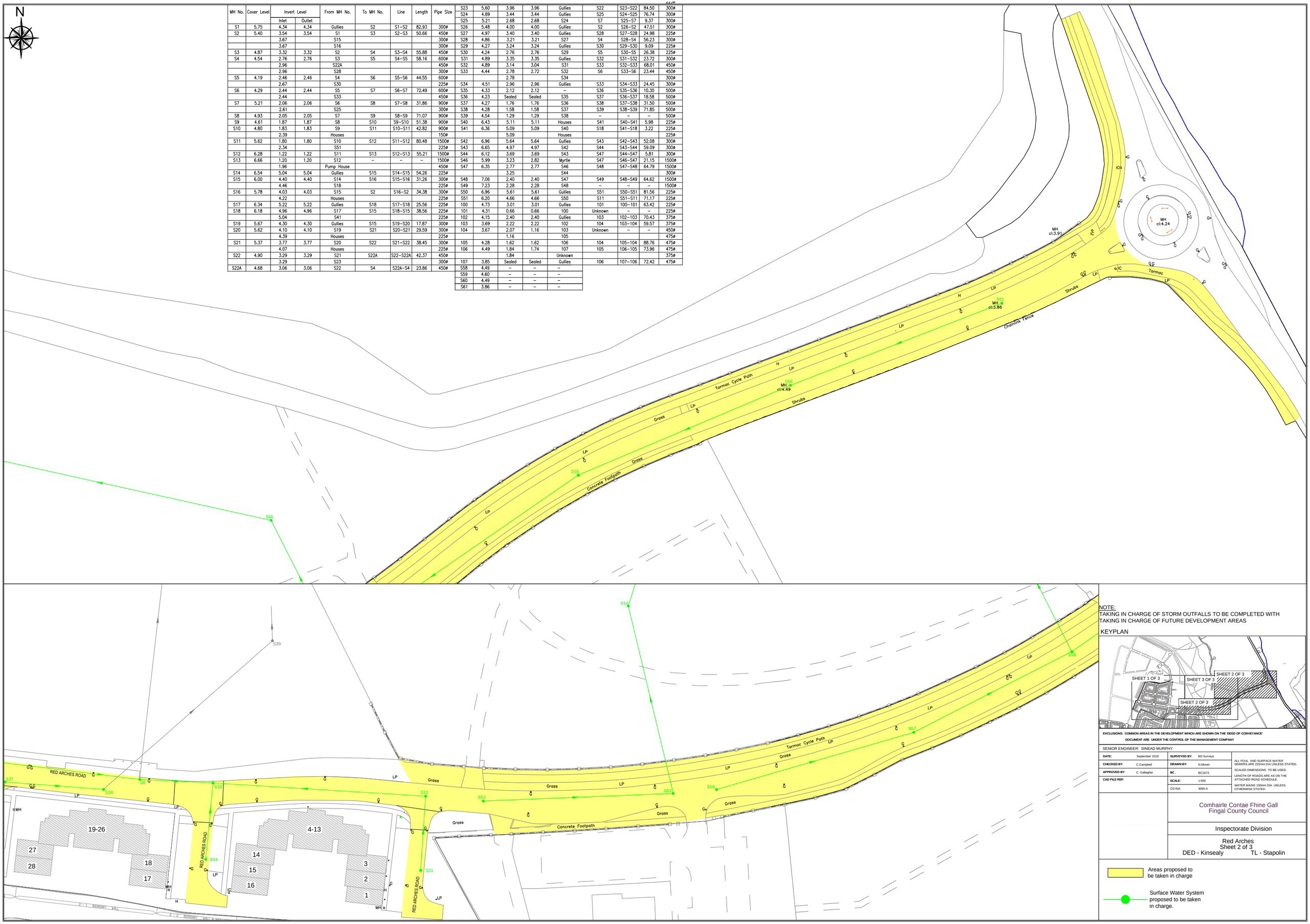
TAKING IN CHARGE
CASTLEROSSE PHASE ONE
CASTLEROSSE PHASE TWO

Foul sewer	🟥	Red
Surface water	🟩	Green
Water main	— — —	Blue
Hydrants	Ⓗ	
Sluice valves	Ⓢⓥ	

J.D. Hackett & Co. 290

MH No.	Cover Level	Invert Level		From MH No.	To MH No.	Line	Length	Pipe Size
		Inlet	Outlet					
S1	5.75	4.34	4.34	Gullies	S2	S1-S2	82.93	300ø
S2	5.40	3.54	3.54	S1	S3	S2-S3	50.66	450ø
		3.67		S15				300ø
		3.67		S16				300ø
S3	4.87	3.32	3.32	S2	S4	S3-S4	55.88	450ø
S4	4.54	2.76	2.76	S3	S5	S4-S5	58.16	600ø
		2.96		S22A				450ø
		2.96		S28				300ø
S5	4.19	2.46	2.46	S4	S6	S5-S6	44.55	600ø
		2.67		S30				225ø
S6	4.29	2.44	2.44	S5	S7	S6-S7	72.49	600ø
		2.44		S33				450ø
S7	5.21	2.06	2.06	S6	S8	S7-S8	31.86	900ø
		2.61		S25				300ø
S8	4.93	2.05	2.05	S7	S9	S8-S9	71.07	900ø
S9	4.61	1.87	1.87	S8	S10	S9-S10	51.38	900ø
S10	4.80	1.83	1.83	S9	S11	S10-S11	42.82	900ø
		2.39		Houses				150ø
S11	5.62	1.80	1.80	S10	S12	S11-S12	80.48	1500ø
		2.34		S51				225ø
S12	6.28	1.22	1.22	S11	S13	S12-S13	55.21	1500ø
S13	6.66	1.20	1.20	S12	–	–	–	1500ø
		1.96		Pump House				450ø
S14	6.54	5.04	5.04	Gullies	S15	S14-S15	54.26	225ø
S15	6.00	4.40	4.40	S14	S16	S15-S16	31.26	300ø
		4.46		S18				225ø
S16	5.78	4.03	4.03	S15	S2	S16-S2	34.38	300ø
		4.22		Houses				225ø
S17	6.34	5.22	5.22	Gullies	S18	S17-S18	25.56	225ø
S18	6.18	4.96	4.96	S17	S15	S18-S15	38.56	225ø
		5.04		S41				225ø
S19	5.67	4.30	4.30	Gullies	S15	S19-S20	17.87	300ø
S20	5.62	4.10	4.10	S19	S21	S20-S21	29.59	300ø
		4.39		Houses				225ø
S21	5.37	3.77	3.77	S20	S22	S21-S22	38.45	300ø
		4.07		Houses				225ø
S22	4.90	3.29	3.29	S21	S22A	S22-S22A	42.37	450ø
		3.29		S23				300ø
S22A	4.68	3.06	3.06	S22	S4	S22A-S4	23.86	450ø

S23	5.60	3.96	3.96	Gullies	S22	S23-S22	84.50	300ø
S24	4.89	3.44	3.44	Gullies	S25	S24-S25	76.74	300ø
S25	5.21	2.68	2.68	S24	S7	S25-S7	9.37	300ø
S26	5.48	4.00	4.00	Gullies	S2	S26-S2	47.51	300ø
S27	4.97	3.40	3.40	Gullies	S28	S27-S28	24.98	225ø
S28	4.86	3.21	3.21	S27	S4	S28-S4	56.23	300ø
S29	4.27	3.24	3.24	Gullies	S30	S29-S30	9.09	225ø
S30	4.24	2.76	2.76	S29	S5	S30-S5	26.38	225ø
S31	4.89	3.35	3.35	Gullies	S32	S31-S32	23.72	300ø
S32	4.89	3.14	3.04	S31	S33	S32-S33	68.01	450ø
S33	4.44	2.78	2.72	S32	S6	S33-S6	23.44	450ø
		2.78		S34				300ø
S34	4.51	2.96	2.96	Gullies	S33	S34-S33	24.45	300ø
S35	4.33	2.12	2.12	–	S36	S35-S36	10.30	500ø
S36	4.23	Sealed	Sealed	S35	S37	S36-S37	18.58	500ø
S37	4.27	1.76	1.76	S36	S38	S37-S38	31.50	500ø
S38	4.28	1.58	1.58	S37	S39	S38-S39	71.85	500ø
S39	4.54	1.29	1.29	S38	–	–	–	500ø
S40	6.43	5.11	5.11	Houses	S41	S40-S41	5.98	225ø
S41	6.36	5.09	5.09	S40	S18	S41-S18	3.22	225ø
		5.09		Houses				225ø
S42	6.96	5.64	5.64	Gullies	S43	S42-S43	52.08	300ø
S43	6.65	4.97	4.97	S42	S44	S43-S44	59.09	300ø
S44	6.12	3.69	3.69	S43	S47	S44-S47	5.81	300ø
S46	5.99	3.23	2.82	Myrtle	S47	S46-S47	21.15	1500ø
S47	6.35	2.77	2.77	S46	S48	S47-S48	64.79	1500ø
		3.25		S44				300ø
S48	7.06	2.40	2.40	S47	S49	S48-S49	64.62	1500ø
S49	7.23	2.28	2.28	S48	–	–	–	1500ø
S50	6.96	5.61	5.61	Gullies	S51	S50-S51	81.56	225ø
S51	6.20	4.66	4.66	S50	S11	S51-S11	71.17	225ø
100	4.73	3.01	3.01	Gullies	101	100-101	63.42	225ø
101	4.31	0.66	0.66	100	Unknown	–	–	225ø
102	4.15	2.40	2.40	Gullies	103	102-103	70.43	375ø
103	3.69	2.22	2.22	102	104	103-104	59.57	375ø
104	3.67	2.07	1.16	103	Unknown	–	–	450ø
		1.16		105				475ø
105	4.28	1.62	1.62	106	104	105-104	88.76	475ø
106	4.49	1.84	1.74	107	105	106-105	73.96	475ø
		1.84		Unknown				375ø
107	3.85	Sealed	Sealed	Gullies	106	107-106	72.42	475ø
S58	4.49	–	–	–				
S59	4.60	–	–	–				
S60	4.49	–	–	–				
S61	3.86	–	–	–				



NOTE:
TAKING IN CHARGE OF STORM OUTFALLS TO BE COMPLETED WITH TAKING IN CHARGE OF FUTURE DEVELOPMENT AREAS

KEYPLAN

EXCLUSIONS: COMMON AREAS IN THE DEVELOPMENT WHICH ARE SHOWN ON THE 'DEED OF CONVEYANCE' DOCUMENT ARE UNDER THE CONTROL OF THE MANAGEMENT COMPANY

SENIOR ENGINEER: SINEAD MURPHY

DATE:	September 2018	SURVEYED BY:	BD Surveys
CHECKED BY:	C.Campbell	DRAWN BY:	N.Moran
APPROVED BY:	C. Gallagher	BC .	BC1673
CAD FILE REF:		SCALE:	1:500
		OS Ref.	3065-A

ALL FOUL AND SURFACE WATER SEWERS ARE 225mm DIA UNLESS STATED.
SCALED DIMENSIONS TO BE USED.
LENGTH OF ROADS ARE AS ON THE ATTACHED ROAD SCHEDULE.
WATER MAINS 100mm DIA. UNLESS OTHERWISE STATED.

Comhairle Contae Fhine Gall
Fingal County Council

Inspectorate Division

Red Arches
Sheet 2 of 3
DED - Kinseally TL - Stapolin

Areas proposed to be taken in charge

Surface Water System proposed to be taken in charge.

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Fingal County Council

Baldoyle Community Centre

Outline Construction Management Plan

BCC-ROD-00-XX-RP-C-0002-OCMP P04

ROD
ROUGHAN & O'DONOVAN

Baldoyle Community Centre

Outline Construction Management Plan

Document No: BCC-ROD-00-XX-RP-C-0002-OCMP

Authors:..... Kieran O´Riordan (KOR)

Checker: ..... Andrew Thomson (AWT)

Approver:..... Kieran O´Riordan (KOR)

Revision	Status	Description	Made	Checked	Approved	Date
P01	S1	Outline Construction & Management Plan	KOR	AWT	KOR	06/12/2022
P03	S1	Change to construction period as per DT mtg 19/12/2022	KOR	KOR	KOR	05/01/2023
P04	S1	Minor amendments	KOR	AWT	AWT	10/11/2023

Baldoyle Community Centre

Outline Construction Management Plan

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1. INTRODUCTION

This document sets out the Outline Construction Management Plan (OCMP) for the construction of the proposed Community Centre at Racecourse Park in Baldoyle, Co. Dublin on behalf of Fingal County Council (FCC). This OCMP applies to all works associated with the construction of the Community Centre. The Community Centre will be constructed by the same contractor (by framework agreement) as is currently completing a similar facility for the FCC in Meakstown, who will further develop and commit to the OCMP prior to commencement of site works. The appointed contractor will consult with all relevant stakeholders with respect to the developed OCMP. The OCMP and any associated and supporting documents provide the construction and traffic management framework for the appointed PSCS/Contractor and Sub-contractors as they incorporate any principles to ensure that the work is carried out with minimal impact on the environment. The construction management staff as well as Contractor´s and Sub-contractor´s staff must comply with the requirements and constraints set forth in the OCMP in developing their site-specific Construction Management Plan (CMP). The implementation of the requirements of the OCMP will ensure that the construction phase of the project is carried out in accordance with the commitments in the various application processes for the development. Once commenced the CMP is considered a live document that will be updated according to changing circumstances on the project and to reflect current construction activities. The CMP must be reviewed and monitored on an on-going basis during the construction process and will include information on the review procedures.

2. DESCRIPTION OF PROJECT

The project consists of the construction of a new Community Centre on a brownfield site and associated site works, including the demolition of existing derelict changing facilities.

Baldoyle Community Centre – Location Plan

The construction of the proposed development will require a variety of construction methodologies. The anticipated phasing of constructionn will be as follows:

- Site preparation;
- Establishing site offices, compounds and security;
- Development of site services, surface water drainage, foul drainage, water mains etc;
- Development of substructure, i.e., excavation of foundations, pouring concrete;
- Development of tanks, petrol interceptors, surface water attenuation and firefighting underground storage tanks;
- Construction of building superstructure;
- Finishing to surfaces and landscaping.

2.1 Site Preparation

Preliminary site clearance will be carried out on the brownfield site. Scrub and vegetation removal will be required as part of site preparation. Vegetation cleared from the site to facilitate construction works will be collected and stored on site wherever possible. For any non-reusable vegetation this will be disposed of at an appropriately licensed waste facility. This site clearance will be carried out on a phase bases, as detailed in table below. Prior to the site clearance/preparation an Ecological Clerk of Works will inspect the site.

Table 2.1: Phasing of Site Clearance (1 month)

Phase	Time Frame	Description of Works
Phase a	Week 1	Removal of trees & scrub within confines of site
Phase b	Week 2	General Site clearance over the area of the site
Phase c	Week 3 - 4	Demolition of existing changing facilities

2.2 Site Construction Compound

A main site construction compound will be required during the construction phase to provide office, canteen, washroom and toilet facilities. The compound will also provide facilities for materials and plant storage and the maintenance of same. The principal site construction compound will be established at the commencement of the contract and remain in place throughout the construction period. It is intended that the site for the compound will be to the north of the proposed building, within the existing car parking area. There are existing foul drainage, surface water drainage and watermain connections on the site. The exact location and mode of operation of the site compounds will be selected by the contractor with regard to relevant guidelines of the Statutory Authority and the relevant agencies. Solid hoarding will be required for health & safety, due to the proximity of local housing areas.

There will be an early consideration of location of material stockpiles, which will be covered with geotextile or similar to prevent mobilisation of suspended solids. Stockpiles must not be located within 10m of an open gully. There will be no dirt, mud and material permitted to enter the surface water drainage system.

Furthermore, the sites of the compounds will be cleared, reinstated and landscaped upon completion of the works to the satisfaction of the Statutory Authority.

3. PROJECT PROGRAMME

The envisaged project programme will be developed during the detailed design stage and will be incorporated into the Preliminary S&H Plan. The Baldoyle Community Centre will be constructed by the same contractor (by framework agreement) as is currently completing a similar facility for FCC in Meakstown. Significant efficiencies in programme are anticipated, as all significant sub-contractors and suppliers are already in place. It is intended that the projected can be completed within 14 months. The construction project is programmed to begin in April 2024, with demolitions and piling complete by mid-June. The concrete frame, ground floor walls, roof framework structure will be complete by end August 2024. Completions to progress through the winter months. Building handover is scheduled for June 2025.

4. CONTROL OF WATER POLLUTION ON SITE

The following sources of water may be susceptible to pollution:

1. **Rainwater:** Run-off or flooding from rainwater can absorb pollutants or suspended solids from stored materials and convey these to the storm water network. Materials should be properly stored on site and is expected that the Contractor will plan site activities accordingly and will postpone excavation works during adverse weather conditions.

2. **Surface Water:** There are no open bodies of water or watercourses within the site. Run-off or surface water that is generated within the site will be discharged to the existing storm water network rather than to open watercourses. The existing storm network is in the ownership of FCC and the Contractor will be required to apply comply with the requirements of any Discharge License granted by FCC. Silt collection/management will be implemented by the Contractor to remove silts from surface water prior to discharging to the public sewer. It is anticipated that the Contractor will discharge to the public sewer/manhole in Red Arches Road via the existing storm pipe that serves the existing car park.

3. **Groundwater:** Ground investigation works have been carried out on the site and these confirm that groundwater is at a depth of 3.0 – 3.4m below ground level. Works below this level will be limited to piling and the envisaged driven pile solution will reduce the risk of impacts on groundwater. The adopted design will have a much lower impact on groundwater than an alternative option of deep trench fill to depths of 4m.

Potential causes of water pollution that need to be guarded against include:

- Accidental spillage of pollutants (oils & hydrocarbons).
- Dirt, mud and other materials being dropped from lorries and plant or spread onto approach roads and carparking areas by traffic travelling to and from the site.
- Run-off from concrete and cement products.

The following protection measures will be followed to ensure water quality discharged from site is maintained:

- All machinery will be refuelled from mobile tankers on the local/access/haul/site roads.
- Mobile storage facilities, such as fuel bowsers, will be bunded to 110% capacity to prevent spills. Tanks for bowsers and generators will be double skinned.
- When not in use, all valves and fuel trigger guns from fuel storage containers will be locked.
- Only dedicated trained and competent personnel will carry out refuelling operations. A spill kit and drip tray will be on site at all times and available for all refuelling operations. Equipment will not be left unattended during refuelling. All pipework from containers to pump nozzles will have anti siphon valves fitted.
- Strict procedures for plant inspection, maintenance and repairs will be detailed in the contractor's method statements and machinery will be checked for leaks before arrival on site.
- All site plant will be inspected at the beginning of each day prior to use. Defective plant will not be used until the defect is satisfactorily fixed.
- All major repair and maintenance operations will take place off site.
- Care will be taken at all times to avoid contamination of the environment with contaminants other than hydrocarbons, such as uncured concrete and other chemicals.
- Surface water from the site will undergo silt management as noted above.

5. WASTE MANAGEMENT

The Contractor will be required to comply with all waste management statutory requirements and will be required to develop and submit a Construction Waste Management Plan prior to the commencement of works. The Waste Management Plan will be a live document and revisions to this will be reported by the Contractor at regular Progress Meetings.

The Contractor will store C&D waste separately on the site and will use separate receptacles of bays for recyclable and non-recyclable materials. Waste generated on site during construction shall be disposed of offsite to licenced waste disposal facilities by licenced disposal contractors in accordance with the Planning Acts.

The Contractor will maintain a file containing all records, dockets & permits relating to the waste generation & movements. This file will be kept on site and will be made available for audits throughout the project.

In terms of excavated material, a Waste Characterisation Assessment has been procured and the Contractor will refer to this during the planning of the works. This report includes waste management or landfill options for excavated material. A foundation approach has been adopted to reduce the amount of excavated material and consequently the amount of material being sent to landfill.

6. TRAFFIC MANAGEMENT

Typical construction associated traffic would include operatives travelling to and from work and deliveries and removal of materials.

All Traffic Management proposals shall be agreed with Fingal County Council, An Garda Síochána and the Employer's Representative prior to construction of the

development. Any temporary barriers placed around the working area should be clearly defined by temporary road markings, signage and coning as specified in the Traffic Signs Manual. The PSCS/ Contractor must carry out a risk assessment before commencement of works on site, to determine the type of barriers (if any), and cones most suitable for the works.

It is envisaged that advance traffic information on traffic proposals will be communicated to the public via local radio and newspapers. It is also envisaged that the Contractor will erect Variable Message Signs (VMS) at key locations around the site.

All Construction Stage Traffic Management must comply with the following:

- Department of the Environment Traffic Signs Manual – Chapter 8 Temporary Traffic Measures and Signs for Road Works, and
- Department of the Environment Guidance for the Control and Management of Traffic at Road Works.

6.1 Temporary Traffic Management Road Safety Audit

The PSCS's/Contractor's Construction Stage Traffic Management Plan including all construction accesses, merges and diversions will be reviewed by the design team and FCC Traffic Department.

The Construction Stage Traffic Management Plan must include:

- Construction vehicle accesses
- Location and details of all temporary roadworks signage including mobile VMS and road markings
- Location and details of all temporary safety barriers
- Details of works deliveries and storage of materials
- Risk Assessments for design and construction of temporary traffic management where relevant
- Details of any proposed construction phasing and associated temporary traffic management measures.

6.2 Vehicular Access to Site

Deliveries and general HGV traffic will access the site from Red Arches Road using the existing vehicular entrance. HGV's will be directed to an appropriate location and an appropriate member of staff from the contractor will be notified to meet the delivery and arrange offloading. Security of the site will be the responsibility of the Contractor and particular attention must be given to the proximity of Racecourse Park and adjacent playground areas. Pedestrian safety barriers will be erected at the entrance to the site to permit safe passage for pedestrians across the access to the development, segregating members of the public from HGV's and other vehicles entering the development.

6.3 Construction Traffic

During the construction phase the project will generate a range of traffic, which can be broken down into the main phases of construction as outlined below.

6.3.1 Site Clearance and Set-up

Earthworks plant will be required to prepare the compound area and install services. Portacabins will be required for the site compounds, as well as portable toilets/welfare facilities, and lock-up containers.

6.3.2 Proposed Development

The commencement of the main construction work will require significant additional construction plant. Regular deliveries of materials and ready mixed concrete will take place during these works. There will also be an increase in the construction workforce resulting in more cars and vans accessing the site.

All HGV's will access the site from Red Arches Road. Safe access must be facilitated to construction traffic with additional specific measures employed to ensure safe access during darkness.

Sufficient space must be allocated to allow construction vehicles to turn around safely on-site to avoid vehicles reversing out of site access points.

6.3.3 Craneage

A crane will be required for the erection of the roof structure and the roof cladding of the sports hall. The roof structure of the sports hall comprises of a series of welded steel portal frames and a profiled metal deck. The primary roof members over the sports hall will be circa. 18m long. The Contractor will develop a proposal for the delivery of the roof members and will agree this with the Local Authority and An Garda Síochána. If required, the delivery of these members could be restricted to outside of peak hours.

The size of the crane will be determined by the Contractor in relation to their overall use for it, but it is likely that its primary use will be for the installation of the roof elements and therefore will be dependent on the size and weight of the roof members. The Contractor will select the type of crane that will be used and will develop a site-specific lifting plan showing details of the size and location for the crane on this specific site.

The installation of the roof members is anticipated to take approximately 10 working days with a further 10 days to complete the installation of the metal deck and to seal the building.

7. NOISE, DUST & VIBRATION

7.1 Dust

Dust is a nuisance and can be damaging to humans, machinery, plants and animals. All workers on site are to consider the nuisance caused by the impacts of dust. The effects of dust will be minimised using the following techniques;

- Avoid creating unnecessary dust.
- Cover materials which could create dust when windy.
- Dampen down dust in operations which create dust.
- Ensure that vehicles leaving site do not leave mud on the road.

Activity-specific Method Statements will be prepared by the Contractor and reviewed by the Design Team & FCC. Dust monitoring will be addressed with the Contractor on an ongoing basis and will be reported at regular Progress Meetings.

7.1.1 Maintenance of Public Roads

There will be potential for delivery vehicles and other site traffic to carry mud and silt onto the public roads when exiting the site. In order to prevent this, a wheel wash facility will be utilised on site. This will be used as required to wash down vehicles prior to leaving the site. A road sweeper should also be deployed on the accesses to the site to keep this clean and prevent vehicles carrying mud onto the public roads and publicly used carparks. Roadside gullies will need to be maintained by the road sweeper contractor. Road line markings will require to be monitored and markings that require replacement throughout the duration of the project will be replaced by a specialist contractor. Close supervision of haul vehicle loading must be carried out on a full time basis by the PSCS/Contractor personnel to ensure there is no over-loading of vehicles.

7.2 Noise & Vibration

The Contractor will comply with all statutory regulations governing the control of noise & vibration. The Contractor will comply with (as a minimum) the British Standard 5228 Part 1 & 2. It is anticipated that the Contractor will fit all noise compressors, percussion tools and vehicles with effective silencers of a type recommended by manufacturers of the compressors, tools and vehicles. The Contractor shall ensure that the noise level from all mechanical appliances is kept to a minimum and shall provide where necessary noise reducing aids. Cranes, piling rigs and other machinery will be shut down during work periods / throttled to minimum when not in use. Noise from the construction of the development shall not give rise to the sound pressure levels (LeQ 15 minutes) measured at noise sensitive locations which exceed the following limits: 55db (A). The Contractor shall employ a vibration monitoring system. The Contractor will nominate a point of contact who will be available during the works at all times. If exceedances are recorded, the contractor will be required to adopt alternative construction methodologies and measures to ensure that the limits are complied with. Noise & vibration monitoring will be reported on by the Contractor at regular Progress Meetings.

8. SUMMARY

This Outline CMP is indicative only, however, it is expected that the final CMP will be prepared by the PSCS/Contractor will incorporate the items outlined above and ensure that all requirements identified as part of the planning consents will be included in the CMP.

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COMMUNITY CENTRE AT BALDOYLE RACECOURSE PARK IN FINGAL

Site-Specific Flood Risk Assessment
P03

August 2023

ROD
ROUGHAN & O'DONOVAN

Community Centre at Baldoyle Racecourse Park in Fingal

Site-Specific Flood Risk Assessment

Document No: BCC-ROD-00-XX-RP-C-0003

Author:..... Angelo Sicilia (AS)

Checker: ..... Warren Vokes (WV)

Approver:..... John Paul Rooney (JPR)

Document No	Revision	Description	Made	Checked	Approved	Date
BCC-ROD-00-XX-RP-C-0003	P01	Flood Risk Assessment	AS	WV	JPR	01/08/2023
BCC-ROD-00-XX-RP-C-0003	P02	Flood Risk Assessment	AS	WV	JPR	14/08/2023
BCC-ROD-00-XX-RP-C-0003	P03	Change to wording section 4.2	KOR	AWT	AWT	19/09/2023

Community Centre at Baldoyle Racecourse Park in Fingal

Site-Specific Flood Risk Assessment

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APPENDICES

APPENDIX A Glossary of Terms

APPENDIX B Indicative Flood Sources

1. INTRODUCTION

Roughan & O'Donovan Consulting Engineers has carried out a Flood Risk Assessment for a brownfield site regarding the development of a new Community Centre at in Baldoyle Racecourse Park, Fingal. This report has been prepared to assess the flood risk to the subject sites and adjacent lands as a result of the proposed development.

1.1 Description of Proposed Development and Study Area

The proposed development includes the delivery of a new community centre including sports hall, studies, changing rooms and toilet facilities. The proposed finished floor level is set at 4.8mOD The development includes the reconstruction of existing parking located to the north of the site, landscaping of the surrounding area within the development site and associated utilities & drainage work.

The site is located off Red Arches Road adjacent to Baldoyle Racecourse Park, Baldoyle, Fingal. The site is bound by the park on three sides, to the south, east and west and Red Arches Road to the north. Access to the Coast Road is gained approximately 400m to the east, and high-density residential developments less than 100m to the west. A minor tributary of the Mayne is culverted/piped through racecourse park and the development site.

Figure 1.1 Site Location (map underlay source: Google Maps)

2. FLOOD RISK

2.1 Introduction

This report has been prepared in accordance with 'The Planning System and Flood Risk Management Guidelines for Planning Authorities' herein referred to as 'The Guidelines' as published by the Office of Public Works (OPW) and Department of Environment, Heritage and Local Government (DoHLG) in 2009.

2.2 Identification of Flood Risk

Flood risk is a combination of the likelihood of a flood event occurring and the potential consequences arising from that flood event and is then normally expressed in terms of the following relationship:

Flood risk = Likelihood of flooding x Consequences of flooding.

To fully assess flood risk an understanding of where the water comes from (i.e. the source), how and where it flows (i.e. the pathways) and the people and assets affected by it (i.e. the receptors) is required. Figure 2.1 below shows a source-pathway-receptor model reproduced from 'The Guidelines' (DEHLG-OPW, 2009).

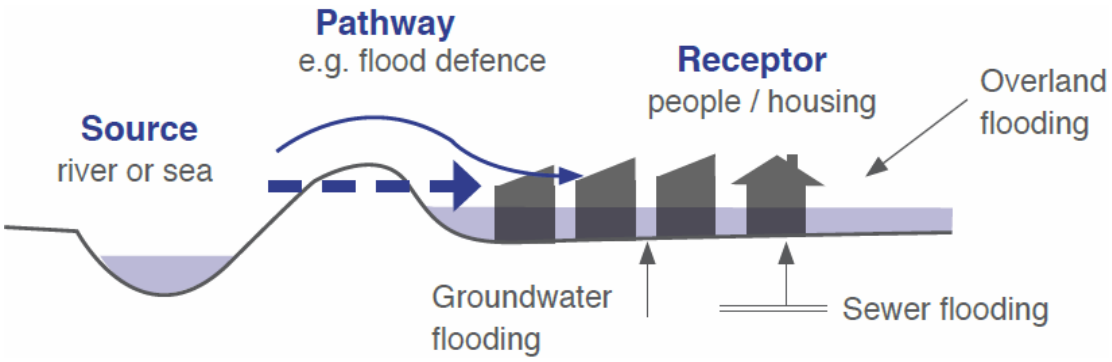


Figure 2.1 Sources, Pathways and Receptors of Flooding

The principal sources of flooding generally are rainfall or higher than normal sea levels. The principal pathways are rivers, drains, sewers, overland flow and river and coastal floodplains. The receptors can include people, their property and the environment. All three elements as well as the vulnerability and exposure of receptors must be examined to determine the potential consequences.

The Guidelines set out a staged approach to the assessment of flood risk with each stage carried out only as needed. The stages are listed below:

- *Stage I Flood Risk Identification* – to identify whether there may be any flooding or surface water management issues.
- *Stage II Initial Flood Risk Assessment* – to confirm sources of flooding that may affect an area or proposed development, to appraise the adequacy of existing information and to scope the extent of the risk of flooding which may involve preparing indicative flood zone maps.
- *Stage III Detailed Flood Risk Assessment* – to assess flood risk issues in sufficient detail and to provide a quantitative appraisal of potential flood risk to a proposed or existing development or land to be zoned, of its potential impact on flood risk elsewhere and of the effectiveness of any proposed mitigation measures.

2.3 Likelihood of Flooding

The Guidelines define the likelihood of flooding as the percentage probability of a flood of a given magnitude or severity occurring or being exceeded in any given year. It is generally expressed as a return period or annual exceedance probability (AEP). A 1% AEP flood indicates a flood event that will be equalled or exceeded on average once every hundred years and has a return period of 1 in 100 years. Annual Exceedance probability is the inverse of return period as shown Table 2.1 below.

Table 2.1 Correlation Between Return Period and AEP

Return Period (years)	Annual Exceedance Probability (%)
1	100
10	10
50	2
100	1
200	0.5
1000	0.1

2.4 Definition of Flood Zones

Flood zones are geographical areas within which the likelihood of flooding is in a particular range. These are split into three categories in The Guidelines:

Flood Zone A

Flood Zone A where the probability of flooding from rivers and the sea is highest (greater than 1% or 1 in 100 for river flooding or 0.5% or 1 in 200 for coastal/tidal flooding);

Flood Zone B

Flood Zone B where the probability of flooding from rivers and the sea is moderate (between 0.1% or 1 in 1000 and 1% or 1 in 100 for river flooding and between 0.1% or 1 in 1000 or 0.5% or 1 in 200 for coastal/tidal flooding);

Flood Zone C

Flood Zone C where the probability of flooding from rivers and the sea is low (less than 0.1% or 1 in 1000 for both river and coastal/tidal flooding. Flood Zone C covers all plan areas which are not in zones A or B.

It is important to note that when determining flood zones the presence of flood protection structures should be ignored. This is because areas protected by flood defences still carry a residual risk from overtopping or breach of defences and the fact that there is no guarantee that the defences will be maintained in perpetuity.

2.5 Sequential Approach & Justification Test

The Guidelines outline the sequential approach that is to be applied to all levels of the planning process. This approach should also be used in the design and layout of a development and the broad philosophy is shown in Figure 2.2 below. In general, development in areas with a high risk of flooding should be avoided as per the sequential approach. However, this is not always possible as many town and city centres are within flood zones and are targeted for development.

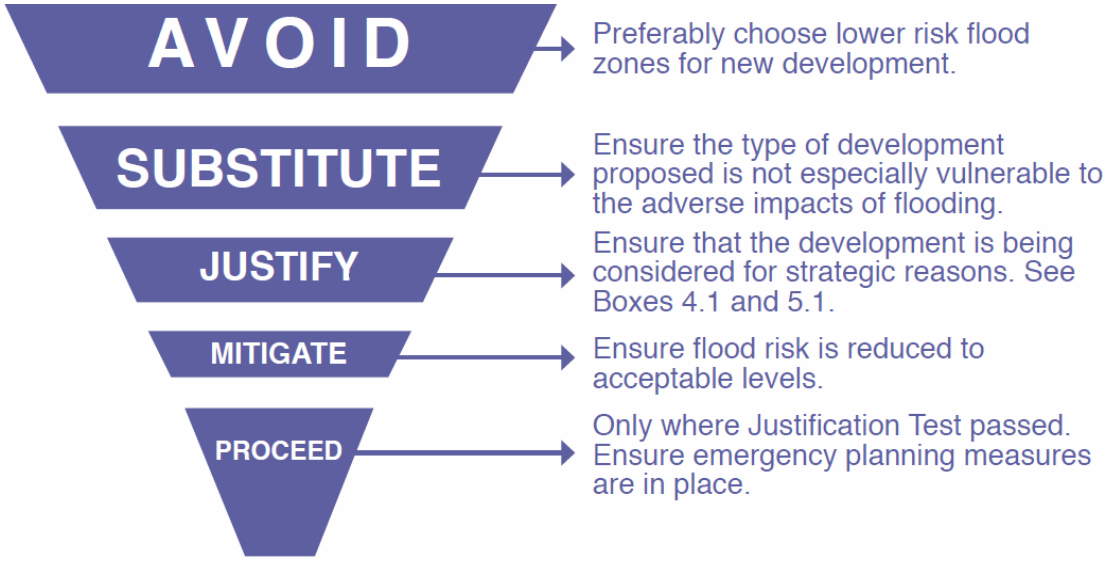


Figure 2.2 Sequential Approach (Source: The Planning System and Flood Risk Management)

The Justification Test has been designed to rigorously assess the appropriateness, or otherwise, of developments that are being considered in areas of moderate or high flood risk. The test comprises the following two processes.

- The first is the Plan-making Justification Test and is used at the plan preparation and adoption stage where it is intended to zone or otherwise designate land which is at moderate or high risk of flooding.
- The second is the Development Management Justification Test and is used at the planning application stage where it is intended to develop land at moderate or high risk of flooding for uses or development vulnerable to flooding that would generally be inappropriate for that land.

Table 2.2 Matrix of Vulnerability Versus Flood Zone to Illustrate Appropriate Development that is Required to Meet the Justification Test (Source: The Planning System and Flood Risk Management)

	Flood Zone A	Flood Zone B	Flood Zone C
Highly vulnerable development (including essential infrastructure)	Justification Test	Justification Test	Appropriate
Less vulnerable development	Justification Test	Appropriate	Appropriate
Water-compatible development	Appropriate	Appropriate	Appropriate

3. STAGE 1: FLOOD RISK IDENTIFICATION

3.1 General

This Stage 1 Flood Risk Identification includes a review of the existing information and the identification of any flooding or surface water management issues in the study area that may warrant further investigation.

3.2 Vulnerability

As per the OPW Guidelines, the proposed development is classified as "less vulnerable" development as it comprises leisure and non-residential institutions. The guidelines stipulate that typically less vulnerable developments are appropriate within Flood Zone B & C (medium and low risk areas).

3.3 Information Sources Consulted

The following information sources were consulted as part of the Stage 1 Flood Risk Identification:

Table 3.1 Information Sources Consulted

Source	Data Gathered
Primary Sources of Baseline Data	
Catchment Flood Risk Assessment and Management Study (CFRAM): www.floodinfo.ie	Fluvial, Pluvial, Coastal flooding examined
National Indicative Fluvial Maps: www.floodinfo.ie	National Indicative Fluvial Maps examined
OPW Past Flood Events Mapping: www.floodinfo.ie	OPW Records of Fluvial, Pluvial, Coastal flooding examined
Irish Coastal Wave and Water Level Modelling Study and National Coastal Flood Hazard Mapping www.floodinfo.ie	Coastal flooding, update to the ICPSS
Irish Coastal Protection Strategy Study (ICPSS)	Coastal flooding nationally
Secondary Sources of Baseline Data	
Strategic Flood Risk Assessment (SFRA) of the Fingal County Development Plan 2023-2029	Fluvial, Coastal and Pluvial flooding examined
Geological Survey of Ireland (GSI) Maps	GSI Teagasc subsoils map consulted to identify if alluvial sediments are shown to be present at development site that may indicate historic flooding.
Historical Maps	OSI 25" mapping assessed
News Reports	News reports published in newspapers or digital news websites.

3.4 Primary Sources of Baseline Data

(i) Catchment Flood Risk Assessment and Management Study (CFRAM)

The CFRAM programme led by the OPW, provides a detailed assessment of flooding in areas identified as AFA's during the OPW's Preliminary Flood Risk Assessment (PFRA) study.

From the consultation of the CFRAM River Flood Extents and Coastal Flood Extents maps, it has been found that no flooding is indicated on the site in the 1 in 1000 year fluvial or coastal event.

It is noted that at the time of reviewing CFRAM maps, the area of the development site is indicated to be "Under Review: information in this area is under review following an objection, submission and/or further information received." on the Floodinfo.ie website. Maps are still available for consultation.

CFRAM Coastal and fluvial Flood Extents Maps are reproduced in Appendix B.

(ii) National Indicative Fluvial Maps (NIFM)

The indicative fluvial flood maps were finalised in December 2020. The mapping presents flood extents for river reaches that were not previously modelled as part of the CFRAMS and have catchments larger than 5 km2. As per the OPW the use of these maps is to "provide an indication of areas that may be prone to flooding. They are not necessarily locally accurate and should not be used as the sole basis for defining the Flood Zones nor for making decisions on planning applications." As the site was considered as part of the CFRAMS study the NIFM maps are not applicable.

(iii) OPW past flood Events (Floodinfo.ie)

The OPW National Flood Hazard Mapping was examined to identify any recorded flood events within the vicinity of the site. No flood events have been recorded on the site, however, a number of flood events have been recorded within 2.5 km from the site.
An overview of the OPW National Flood Hazard Mapping is reproduced in appendix B.

(iv) Irish Coastal Protection Strategy Study (ICPSS) – NORTH EAST .

The Irish Coastal Protection Strategy Study (ICPSS) Phase 3, undertaken by the OPW, covers coastal flooding throughout Ireland. The aims of the ICPSS were to establish extreme coastal flood levels and extents, produce coastal flood extent and flood depth maps and assess and quantify the hazard and potential risk associated with coastal erosion.

Water levels at the Node Label Point 17 located around 2 km east of the site are stated in Table 3.2.

Table 3.2 ICPSS Flood Levels

Return Period	Current climate (mOD)	Climate Change - Mid Range Future Scenario (mOD)	Climate Change - High-End Future Scenario (mOD)
10% AEP Event	2.75	3.25	3.75
0.5% AEP Event	3.18	3.68	4.18
0.1% AEP Event	3.41	3.91	4.41

The published ICPSS flood maps are reproduced in Appendix B.

(v) Irish Coastal Wave and Water Level Modelling Study and National Coastal Flood Hazard Mapping

The Irish Coastal Wave and Water Level Modelling Study (ICWWS) provides an update to the Estimated Extreme Coastal Boundary Water Levels, associated with astronomical tide, storm surge and seiche/local wind set-up allowance, for the coast of Ireland, originally presented as output from the ICPSS. The ICWWS levels were used to generate National Coastal Flood Hazard Mapping. These flood maps indicate that there is flooding in the vicinity of the site for the current scenario maps. The mapping for the medium range future scenario and High-end future scenario indicate flooding on the site.

Water levels at the North East Point NE17 located around 2 km east of the site are stated in Table 3.3.

Table 3.3 ICWWS Flood Levels

Return Period	Current climate (mOD)	Climate Change - Mid Range Future Scenario (mOD)	Climate Change - High-End Future Scenario (mOD)
10% AEP Event	2.84	3.34	3.84
0.5% AEP Event	3.13	3.63	4.13
0.1% AEP Event	3.28	3.78	4.28

National Coastal Flood Hazard Mapping and National Coastal Extreme Levels Estimation Points have been reproduced in appendix B

3.5 Secondary Sources of Baseline data

The following sources were also examined to identify areas that may be liable to flooding:

(i) Strategic Flood Risk Assessment (SFRA) of the Fingal County Development Plan 2023-2029

The site area is covered as part of the Fingal County Development Plan 2023-2029. There are no indicators of flood risks on current climate scenario maps, however, maps for medium range scenario Flood Extents and High End future scenario Flood Extents indicate that there is a probability of flooding on the site. An overview of the Strategic Flood Risk Assessment Flood Extents Mapping is reproduced in appendix B.

(ii) Geological Survey of Ireland Maps

According to the Geological Survey Ireland (GSI), the underlying subsoil Estuarine silt and clay, and there are no known karst features (swallow holes, enclosed depressions, wells or springs) within the footprint of the site.

(iii) Historical Maps

Historical Maps were studied. No areas of the site have been identified as liable to flooding.

(iv) News reports

No News report of flooding have been found in relation to the site.

3.6 Source – Pathway – Receptor Model

The following source-pathway-receptor model has been developed using the information examined in the Stage I Flood Risk Identification to categorise the sources of flooding, where it flows to (pathway) and the people and infrastructure affected by it (receptors). The likelihood and consequences of each type of flooding have also been assessed to determine the risk. These are summarised in Table 3.4 (taken from Appendix A of the Guidelines).

Table 3.4 Source-Pathway-Receptor Model

Source	Pathway	Receptor	Likelihood	Consequence	Risk
Fluvial flooding	Overbank flow from the Mayne River	Leisure and non-residential institutions	*Low*	*Medium*	*Medium*
Pluvial / Surface Water flooding	Extreme rainfall events and inadequate surface water drainage	Leisure and non-residential institutions	*Low*	*Medium*	*Low*
Coastal flooding	Extreme tides, storm surges or wave overtopping	Leisure and non-residential institutions	*Medium*	*Medium*	*Medium*
Ground-water Flooding	Rising groundwater levels	Leisure and non-residential institutions	*Low* (No reports or geological indicators)	*Medium*	*Low*

3.7 Stage 1 Conclusions

3.7.1 Fluvial Flooding

Fingal Strategic Flood Risk Assessment Flood Extents maps indicates flooding in the vicinity of the site. Therefore, the risk of fluvial flooding at the site is classified as medium and a Stage 2 – Initial Fluvial Flood Risk Assessment is required for the development.

3.7.2 Coastal Flooding

The Irish Coastal Wave and Water Level Modelling Study indicates that Coastal flooding is identified as a source of flooding affecting lands in the vicinity of the site. Therefore, the risk of coastal flooding at the site is classified as medium and a Stage 2 – Initial Fluvial Flood Risk Assessment is required for the development.

3.7.3 Pluvial Flooding

Pluvial flooding was not identified as a source of flooding affecting the site. Therefore, the risk of pluvial flooding is classified as low and no further assessment is required.

3.7.4 Groundwater Flooding

Groundwater flooding was not identified as a source of flooding affecting the site. Therefore, the risk of groundwater flooding is classified as Low and no further assessment is required.

4. STAGE 2 – INITIAL FLOOD RISK ASSESSMENT

4.1 General

The Stage 2 Initial Flood Risk Assessment will confirm the sources of flooding that may affect the proposed development site, appraise the adequacy of existing information and scope the requirements of the Stage 3 Detailed Flood Risk Assessment.

4.2 Sources of Flooding

Flooding from Fluvial & Sea Level Rises / Coastal Flooding

A minor tributary of the River Mayne is culverted through the site. This emerges into open channel approximately 150m north of Red Arches Rd. This culvert appears to be inoperable due to the significant build-up of silt that was observed during an abandoned manhole/CCTV survey. The small streams and watercourses adjacent to the site (approximately 150m from the site) are tidally dominated at this location. As such flooding derived from coastal sources is the primary source of flood risk to the proposed development. The flood levels derived as part of the ICWWS are considered the most representative for the site and are proposed as the basis for the design flood levels (presented in Table 4.1). The predicted flood levels (in conjunction with associated mapping) indicate that the proposed development site is not liable to flood in the 1 in 1000 year current climate scenario either from fluvial or coastal sources. As such the proposed development is within Flood Zone C and is appropriate for the associated flood risk as per The Guidelines. The site is not considered to require a stage 3 detailed flood risk assessment with respect to flooding derived from Fluvial or Coastal Flooding.

Nonetheless, the proposed development is to include measures to ensure that it is protected to the 1 in 200 year flood level + MRFS climate change factor and appropriate freeboard as per the OPW Guidelines and Fingal County Development Plan SFRA. The proposed design flood level is derived below. As per the Fingal SFRA Freeboard for Less Vulnerable developments is the greater of:

- 500mm freeboard above current scenario; or
- 250mm above the MRFS (for less vulnerable developments).

Levels are given in table below. The design flood level is therefore 3.88mOD.

Table 4.1 Design Flood Level

	Current	MRFS
ICWWS (North East Point NE17)	3.13	3.63
Freeboard (as per Fingal SFRA)	0.5	0.250
Total	3.63	3.88

As the proposed finished floor level is set at 4.8mOD, the highest water level anticipated from coastal or fluvial flooding is 0.92m below the proposed finished floor level.

Surface Water Flooding

Surface water flooding occurs when the local drainage system cannot convey stormwater flows from extreme rainfall events. The rainwater does not drain away through the normal drainage pathways or infiltrate into the ground but instead ponds on or flows over the ground instead. Surface water flooding is unpredictable as it

depends on a number of factors including ground levels, rainfall and the local drainage network. Appropriate measures in the form of Sustainable Drainage Systems (SuDS) for the purpose for managing surface water in terms of both flow and quality, have been adopted as part of the development design in line with Fingal Country Council requirements and the GDSDS.

Groundwater Flooding

Groundwater flooding is a result of upwelling in occurrences where the water table or confined aquifers rises above the ground surface. This tends to occur after long periods of sustained rainfall and/or very high tides. High volumes of rainfall and subsequent infiltration to ground will result in a rising of the water table. Groundwater flooding tends to occur in low-lying areas, where with additional groundwater flowing towards these areas, the water table can rise to the surface causing groundwater flooding. The sources consulted such as the CFRAM mapping and GSI records show no indication that the site is subject to Groundwater derived flooding.

Pluvial Flood Risk

Pluvial flooding results from heavy rainfall that exceeds ground infiltration capacity or more commonly in Ireland where the ground is already saturated from previous rainfall events. This causes ponding and flooding at localized depressions. Pluvial flooding is commonly a result of changes to the natural flow regime such as the implementation of hard surfacing and improper drainage design. The sources consulted such as the CFRAM mapping and PFRA mapping show no indication that the site is subject to pluvial derived flooding. Pluvial flooding will be considered in the design of drainage systems as part of planned development.

4.3 Conclusion of Stage 2 SFRA

The available sources consulted above indicate that the proposed development site is not liable to flood in the 1 in 1000 year current climate scenario either from fluvial or coastal sources. As such the proposed development is within Flood Zone C and is therefore appropriate for the associated flood risk as per The Guidelines.

A small proportion of the site is indicated to flood in extreme events when climate change is considered. However, the primary source of such flooding is tidal. Any potential displaced volumes will be insignificant in comparison to the volumes within the Irish Sea. Any effects on flood levels and flow paths will be imperceptible.

As the proposed finished floor level is set at 4.8mOD, the highest water level anticipated from coastal and fluvial flooding (when considering climate change) is 0.92m below the proposed finished floor level. The site is not considered to require a stage 3 detailed flood risk assessment with respect to flooding derived from Fluvial or Coastal Flooding.

5. FLOOD RISK ASSESSMENT CONCLUSIONS

This Site-Specific Flood Risk Assessment has considered the local hydrological conditions pertaining to the proposed development and identified flood risk the vicinity of the development lands. All sources indicate that the proposed development is within Flood Zone C. Suitable flood risk management measures have been adopted to mitigate the likely impacts of climate change. Appropriate measures in the form of Sustainable Drainage Systems (SuDS) for the purpose for managing surface water in terms of both flow and quality, have been adopted as part of the development design in line with Fingal Country Council requirements and the GDSDS. The findings of this SSFRA indicate that flood risk to the scheme can be managed with negligible effect on flood risk elsewhere. The proposed development satisfies the requirements of the sequential approach (as described in the OPW's "The Planning System and Flood Risk Management Guidelines for Planning Authorities") and is therefore deemed appropriate for the associated flood risk.

APPENDIX A

GLOSSARY OF TERMS

GLOSSARY OF TERMS

Catchment: The area that is drained by a river or artificial drainage system.

Catchment Flood Risk Assessment and Management Studies (CFRAMS): A catchment-based study involving an assessment of the risk of flooding in a catchment and the development of a strategy for managing that risk in order to reduce adverse effects on people, property and the environment. CFRAMS precede the preparation of Flood Risk Management Plans (see entry for FRMP).

Climate change: Long-term variations in global temperature and weather patterns, which occur both naturally and as a result of human activity, primarily through greenhouse gas emissions.

Core of an urban settlement: The core area of a city, town or village which acts as a centre for a broad range of employment, retail, community, residential and transport functions.

Detailed flood risk assessment: A methodology to assess flood risk issues in sufficient detail and to provide a quantitative appraisal of flood hazard and potential risk to an existing or proposed development, of its potential impact on flood elsewhere and of the effectiveness of any proposed measures.

Estuarial (or tidal) flooding: Flooding from an estuary, where water level may be influenced by both river flows and tidal conditions, with the latter usually being dominant.

Flooding (or inundation): Flooding is the overflowing of water onto land that is normally dry. It may be caused by overtopping or breach of banks or defences, inadequate or slow drainage of rainfall, underlying groundwater levels or blocked drains and sewers. It presents a risk only when people, human assets and ecosystems are present in the areas that flood.

Flood Relief Schemes (FRS): A scheme designed to reduce the risk of flooding at a specific location.

Flood Defence: A man-made structure (e.g. embankment, bund, sluice gate, reservoir or barrier) designed to prevent flooding of areas adjacent to the defence.

Flood Risk Assessment (FRA): FRA can be undertaken at any scale from the national down to the individual site and comprises 3 stages: Flood risk identification, initial flood risk assessment and detailed flood risk assessment.

Flood Risk Identification: A desk- based study to identify whether there may be any flooding or surface water management issues related to a plan area or proposed development site that may warrant further investigation.

Flood Hazard: The features of flooding which have harmful impacts on people, property or the environment (such as the depth of water, speed of flow, rate of onset, duration, water quality, etc.).

Floodplain: A flood plain is any low-lying area of land next to a river or stream, which is susceptible to partial or complete inundation by water during a flood event.

Flood Risk: An expression of the combination of the flood probability, or likelihood and the magnitude of the potential consequences of the flood event.

Flood Storage: The temporary storage of excess run-off, or river flow in ponds, basins, reservoirs or on the flood plain.

Flood Zones: A geographic area for which the probability of flooding from rivers, estuaries or the sea is within a particular range.

Fluvial flooding: Flooding from a river or other watercourse.

Groundwater flooding: Flooding caused by groundwater escaping from the ground when the water table rises to or above ground level.

Initial flood risk assessment: A qualitative or semi-quantitative study to confirm sources of flooding that may affect a plan area or proposed development site, to appraise the adequacy of existing information, to provide a qualitative appraisal of the risk of flooding to development, including the scope of possible mitigation measures, and the potential impact of development on flooding elsewhere, and to determine the need for further detailed assessment.

Freeboard: Factor of safety applied for water surfaces. Defines the distance between normal water level and the top of a structure, such as a dam, that impounds or restrains water.

Justification Test: An assessment of whether a development proposal within an area at risk of flooding meets specific criteria for proper planning and sustainable development and demonstrates that it will not be subject to unacceptable risk nor increase flood risk elsewhere. The justification test should be applied only where development is within flood risk areas that would be defined as inappropriate under the screening test of the sequential risk-based approach adopted by this guidance.

Likelihood (probability) of flooding: A general concept relating to the chance of an event occurring. Likelihood is generally expressed as a probability or a frequency of a flood of a given magnitude or severity occurring or being exceeded in any given year. It is based on the average frequency estimated, measured or extrapolated from records over a large number of years and is usually expressed as the chance of a particular flood level being exceeded in any one year. For example, a 1-in-100 or 1% flood is that which would, on average, be expected to occur once in 100 years, though it could happen at any time.

Ordnance Datum (or OD) Malin: is a vertical datum used by an ordnance survey as the basis for deriving altitudes on maps. A spot height may be expressed as AOD for “above ordnance datum”. Usually mean sea level (MSL) is used for the datum. In the Republic of Ireland, OD for the Ordnance Survey of Ireland is Malin Ordnance Datum: the MSL at Portmoor Pier, Malin Head, County Donegal, between 1960 and 1969. Prior to 1970, Poolbeg Ordnance Datum was used: the low water of spring tide at Poolbeg lighthouse, Dublin, on 8 April 1837. Poolbeg OD was about 2.7 metres lower than Malin OD.

Management Train/Treatment Train: the sequence of drainage components that collect, convey, store and treat runoff as it drains through the site.

Mitigation: The term is used to describe an action that helps to lessen the impacts of a process or development on the receiving environment. It is used most often in association with measures that would seek to reduce negative impacts of a process or development.

Pathways: These provide the connection between a particular source (e.g. high river or tide level) and the receptor that may be harmed (e.g. property). In flood risk management, pathways are often ‘blocked’ by barriers, such as flood defence structures, or otherwise modified to reduce the incidence of flooding.

Pluvial flooding: Usually associated with convective summer thunderstorms or high intensity rainfall cells within longer duration events, pluvial flooding is a result of rainfall-generated overland flows which arise before run-off enters any watercourse or sewer. The intensity of rainfall can be such that the run-off totally overwhelms surface water and underground drainage systems.

Regional Planning Guidelines (RPG): These provide the regional context and priorities for applying national planning strategy to each NUTS III region and encourage greater co-ordination of planning policies at the city/county level. RPGs are an important part of the flood policy hierarchy as they can assist in co-ordinating flood risk management policies at the regional level.

Resilience: Sometimes known as "wet-proofing", resilience relates to how a building is constructed in such a way that, although flood water may enter the building, its impact is minimised, structural integrity is maintained, and repair, drying and cleaning and subsequent reoccupation are facilitated.

Receptors: Things that may be harmed by flooding (e.g. people, houses, buildings or the environment).

Residual risk: The risk which remains after all risk avoidance, substitution and mitigation measures have been implemented, on the basis that such measures can only reduce risk, not eliminate it.

Sequential Approach: The sequential approach is a risk-based method to guide development away from areas that have been identified through a flood risk assessment as being at risk from flooding. Sequential approaches are already established and working effectively in the plan-making and development management processes.

Sustainable Drainage System (SuDS): Drainage systems that are considered to be environmentally beneficial, causing minimal or no long-term detrimental impact.

Site-specific Flood Risk Assessment: An examination of the risks from all sources of flooding of the risks to and potentially arising from development on a specific site, including an examination of the effectiveness and impacts of any control or mitigation measures to be incorporated in that development.

Source: Refers to a source of hazard (e.g. the sea, heavy rainfall).

Strategic Flood Risk Assessment: The assessment of flood risk on a wide geographical area against which to assess development proposed in an area (Region, County, Town).

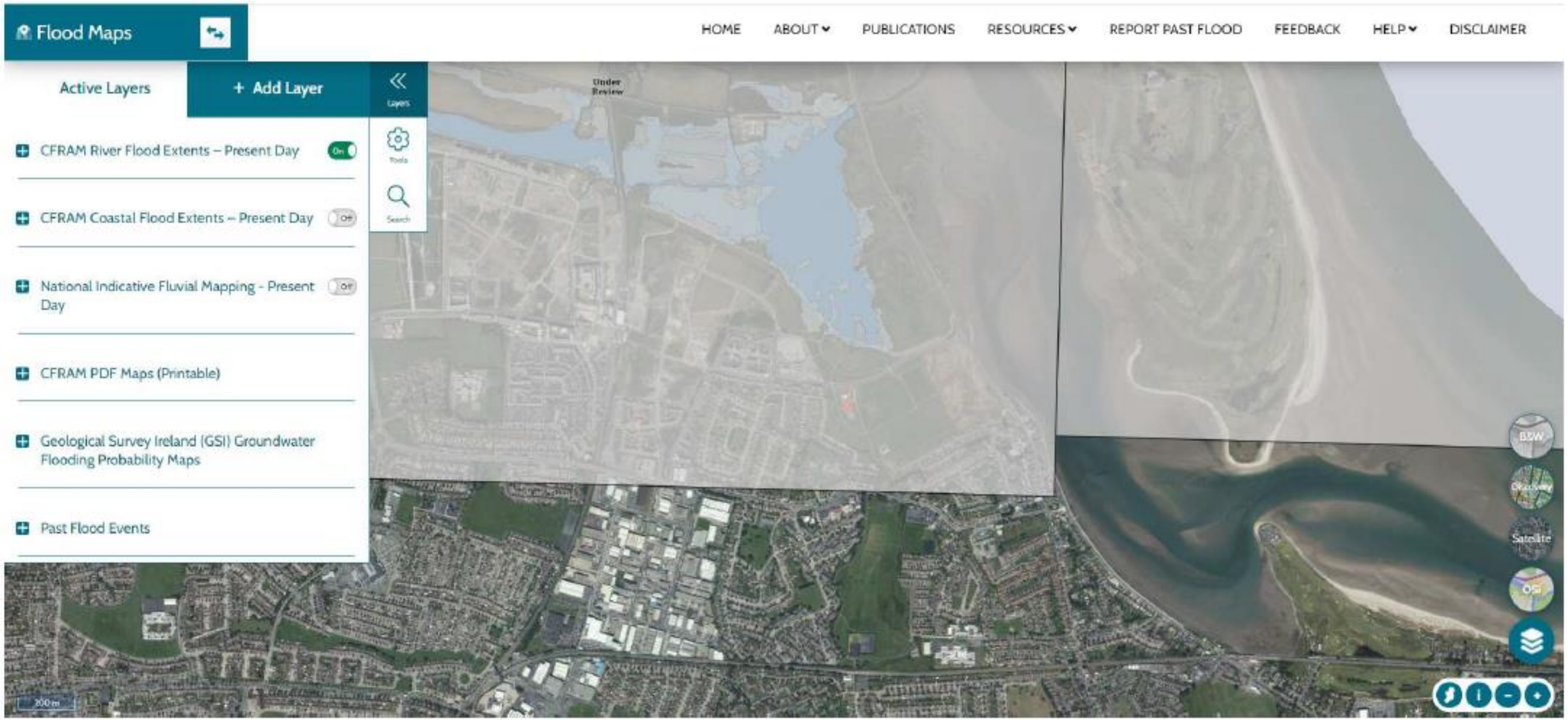
Vulnerability: The resilience of a particular group of people or types of property or habitats, ecosystems or species to flood risk, and their ability to respond to a hazardous condition and the damage or degree of impact they are likely to suffer in the event of a flood. For example, elderly people may be more likely to suffer injury, and be less able to evacuate, in the event of a rapid flood than younger people.

Source: *The definitions above are sourced from the DoEHLG Guidelines for Planning Authorities on 'The Planning System and Flood Risk Management, 2009' and Ciria 753 "the SuDS Manual".*

APPENDIX B

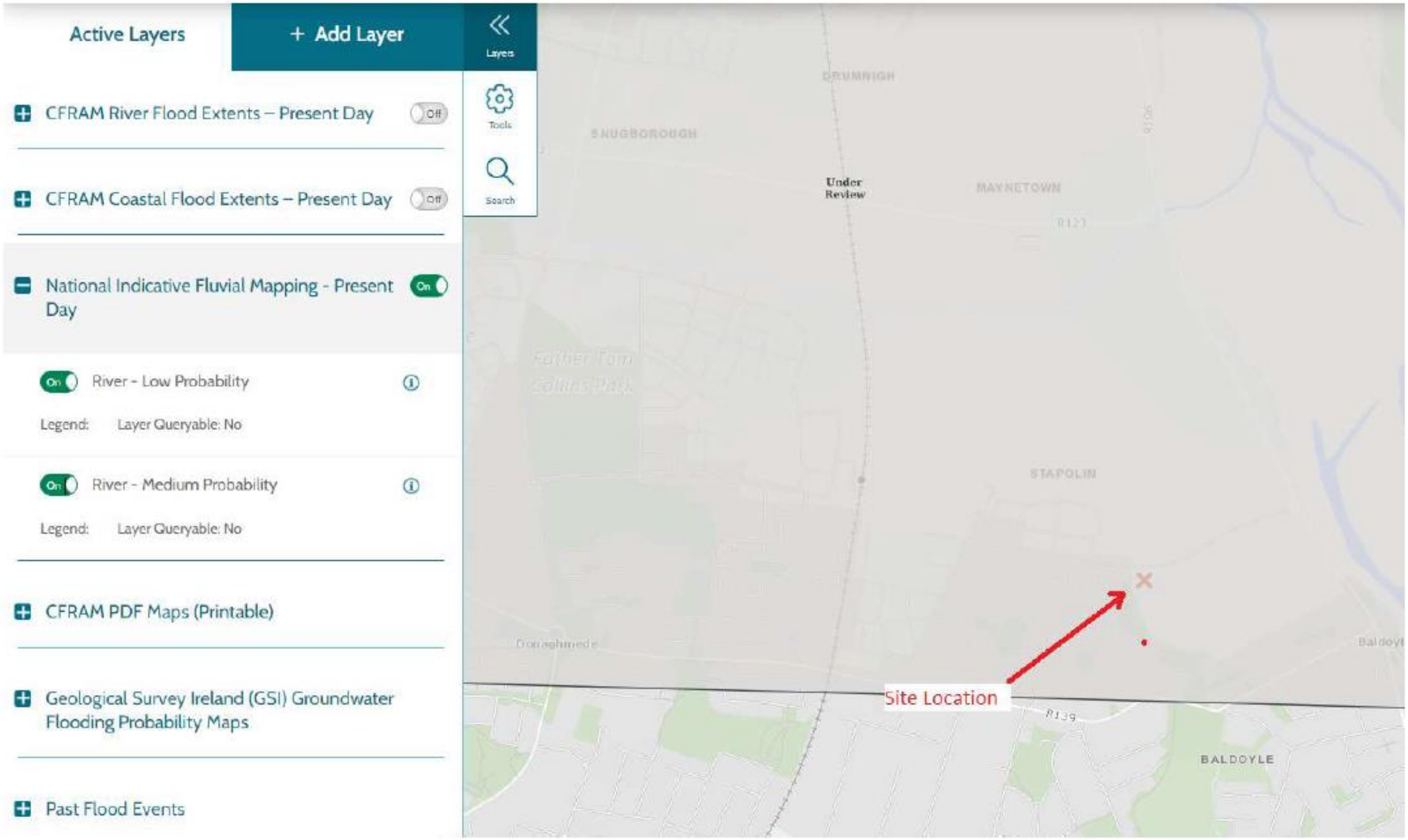
INDICATIVE FLOOD SOURCES

CFRAM River Flood Extents

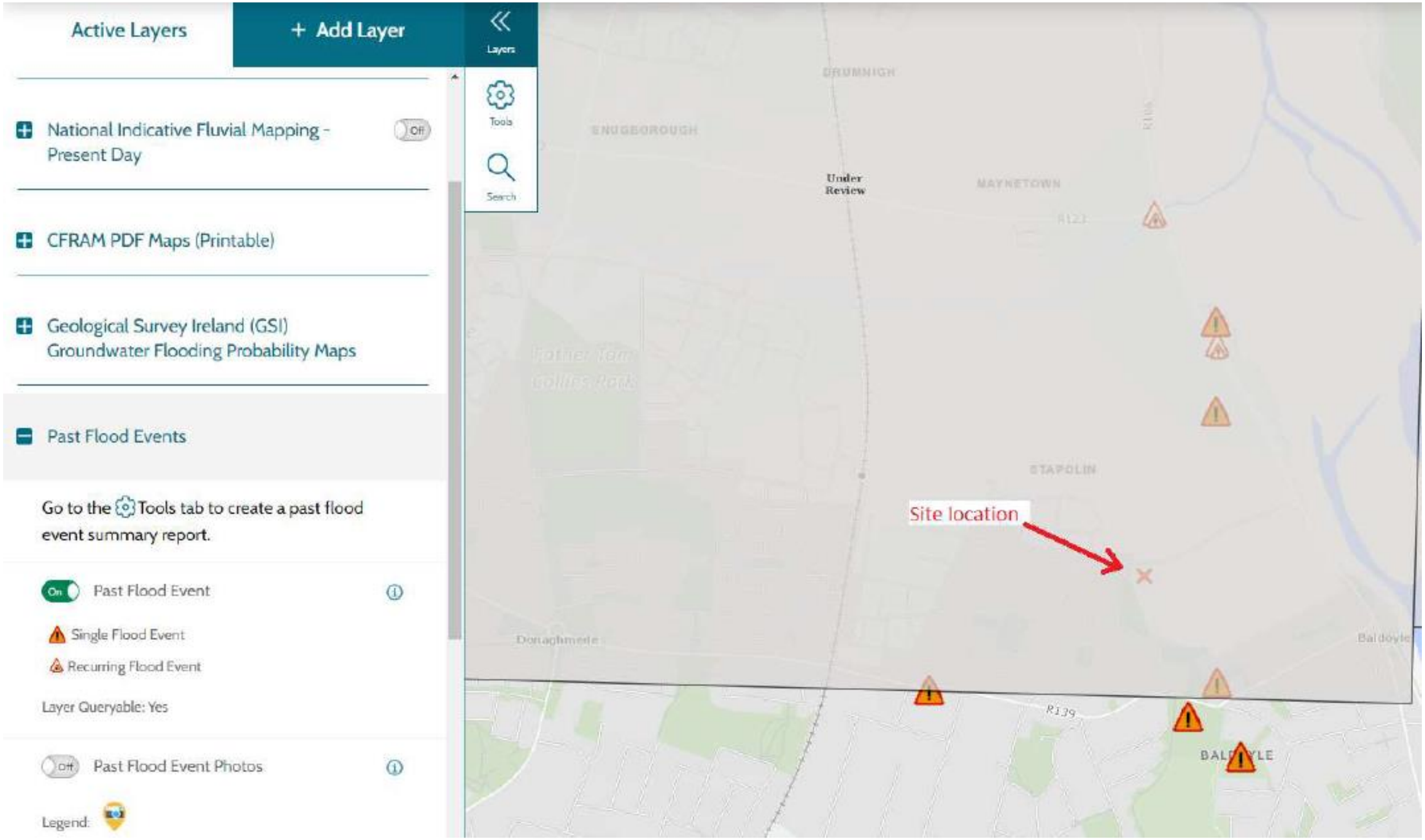


CFRAM Coastal Flood Extents

National Indicative Fluvial Mapping



OPW – PAST FLOOD EVENTS



OPW – PAST FLOOD EVENTS LOCAL AREA SUMMARY REPORT

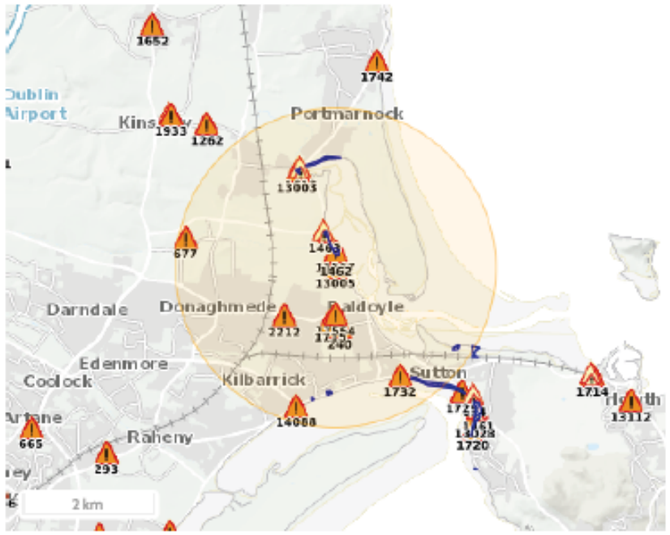
Past Flood Event Local Area Summary Report

OPW Oifig na nOibreacha Poibli Office of Public Works

Report Produced: 18/7/2023 18:35

This Past Flood Event Summary Report summarises all past flood events within 2.5 kilometres of the map centre.

This report has been downloaded from www.floodinfo.ie (the "Website"). The users should take account of the restrictions and limitations relating to the content and use of the Website that are explained in the Terms and Conditions. It is a condition of use of the Website that you agree to be bound by the disclaimer and other terms and conditions set out on the Website and to the privacy policy on the Website.



Map Legend

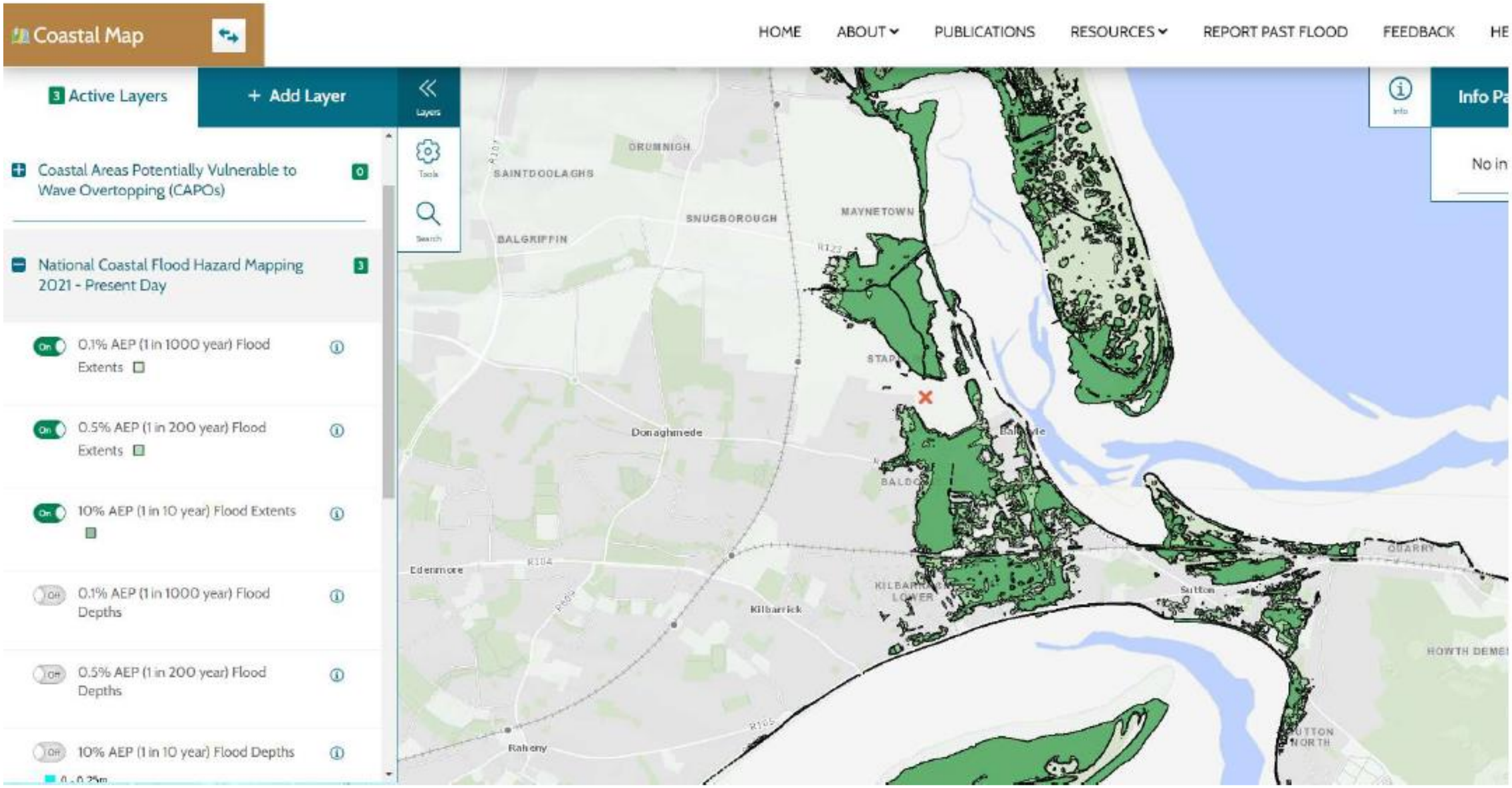
- Single Flood Event
- Recurring Flood Event
- Past Flood Event Extents
- Drainage Districts Benefited Lands*
- Land Commission Benefited Lands*
- Arterial Drainage Schemes Benefited Lands*

* Important: These maps do not indicate flood hazard or flood extent. Their purpose and scope is explained on Floodinfo.ie

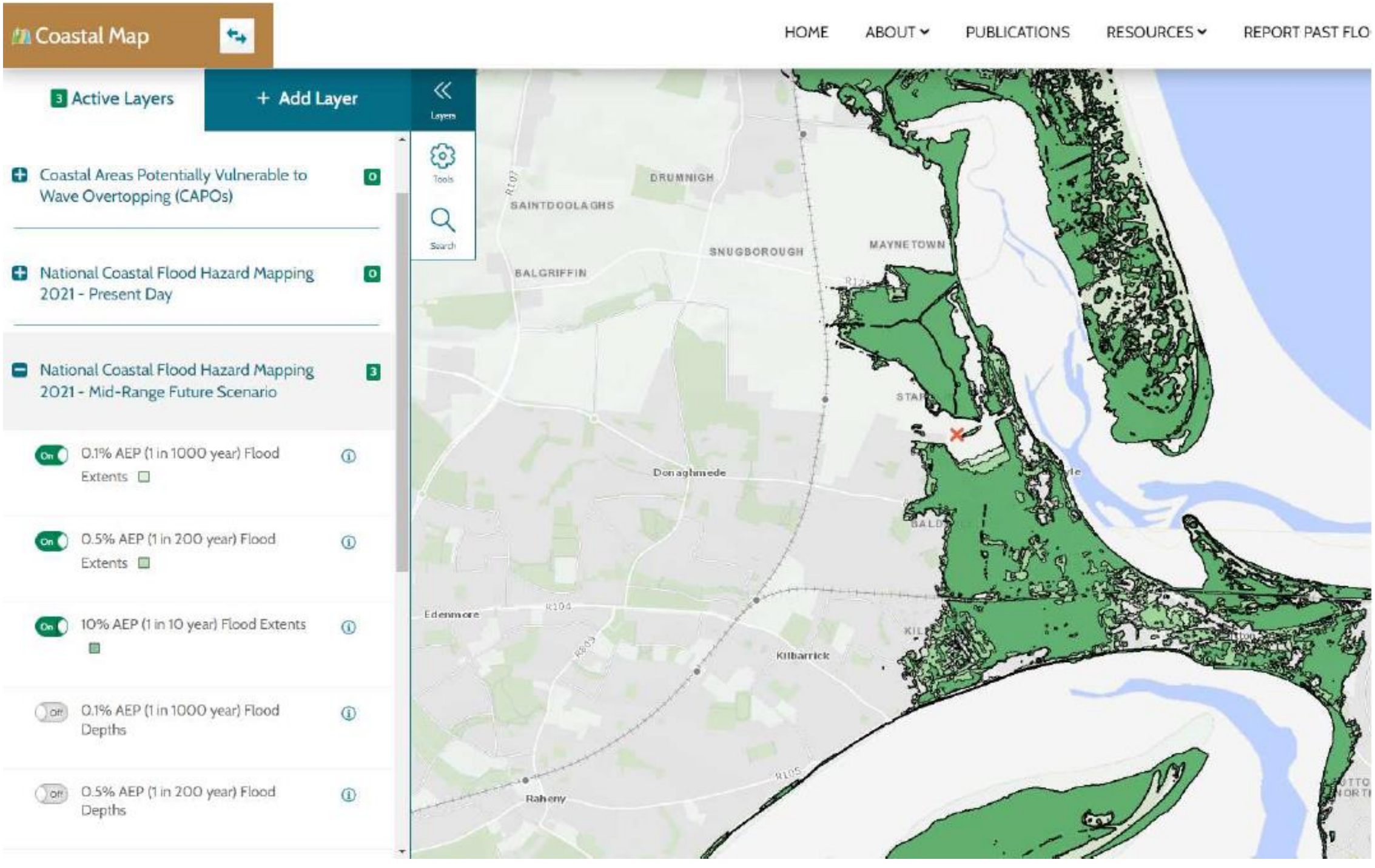
14 Results

	Name (Flood_ID)	Start Date	Event Location
1.	The Grange Road Baldoyle Oct 2002 (ID-1715) Additional Information: Reports (1) Press Archive (0)	19/10/2002	Exact Point
2.	Dublin Road Sutton Feb 2002 (ID-1732) Additional Information: Reports (1) Press Archive (0)	01/02/2002	Approximate Point
3.	Grange Road Donaghmede Nov 1982 (ID-2212) Additional Information: Reports (1) Press Archive (0)	07/11/1982	Approximate Point
4.	Flooding at Portmarnock on 03/01/2014 (ID-13003) Additional Information: Reports (0) Press Archive (0)	03/01/2014	Approximate Point
5.	Flooding at Baldoyle on 03/01/2014 (ID-13005) Additional Information: Reports (0) Press Archive (0)	03/01/2014	Approximate Point
6.	Grange Stream Baldoyle Dec 1954 (ID-240) Additional Information: Reports (1) Press Archive (0)	08/12/1954	Exact Point
7.	Sluice River Strand Road Portmarnock Recurring (ID-1613) Additional Information: Reports (5) Press Archive (0)	n/a	Exact Point
8.	Mayne Balgriffin Park June 1993 (ID-677) Additional Information: Reports (1) Press Archive (0)	10/06/1993	Approximate Point
9.	Baldoyle Coastal Recurring (ID-1462) Additional Information: Reports (5) Press Archive (0)	n/a	Approximate Point
10.	Mayne River Bridge Baldoyle Recurring (ID-1463) Additional Information: Reports (4) Press Archive (0)	n/a	Exact Point
11.	Flooding at Kilbarrack on 02/12/2021 (ID-14088) Additional Information: Reports (0) Press Archive (0)	02/12/2021	Approximate Point
12.	Dublin City Tidal Feb 2002 (ID-456) Additional Information: Reports (45) Press Archive (27)	01/02/2002	Area
13.	Flooding at Brookstone Road, Baldoyle, Dublin 13 on 24th Oct 2011 (ID-11564) Additional Information: Reports (1) Press Archive (0)	23/10/2011	Approximate Point
14.	Flooding at Coast Road, Baldoyle, Dublin 13 on 24th Oct 2011 (ID-11567) Additional Information: Reports (1) Press Archive (0)	23/10/2011	Approximate Point

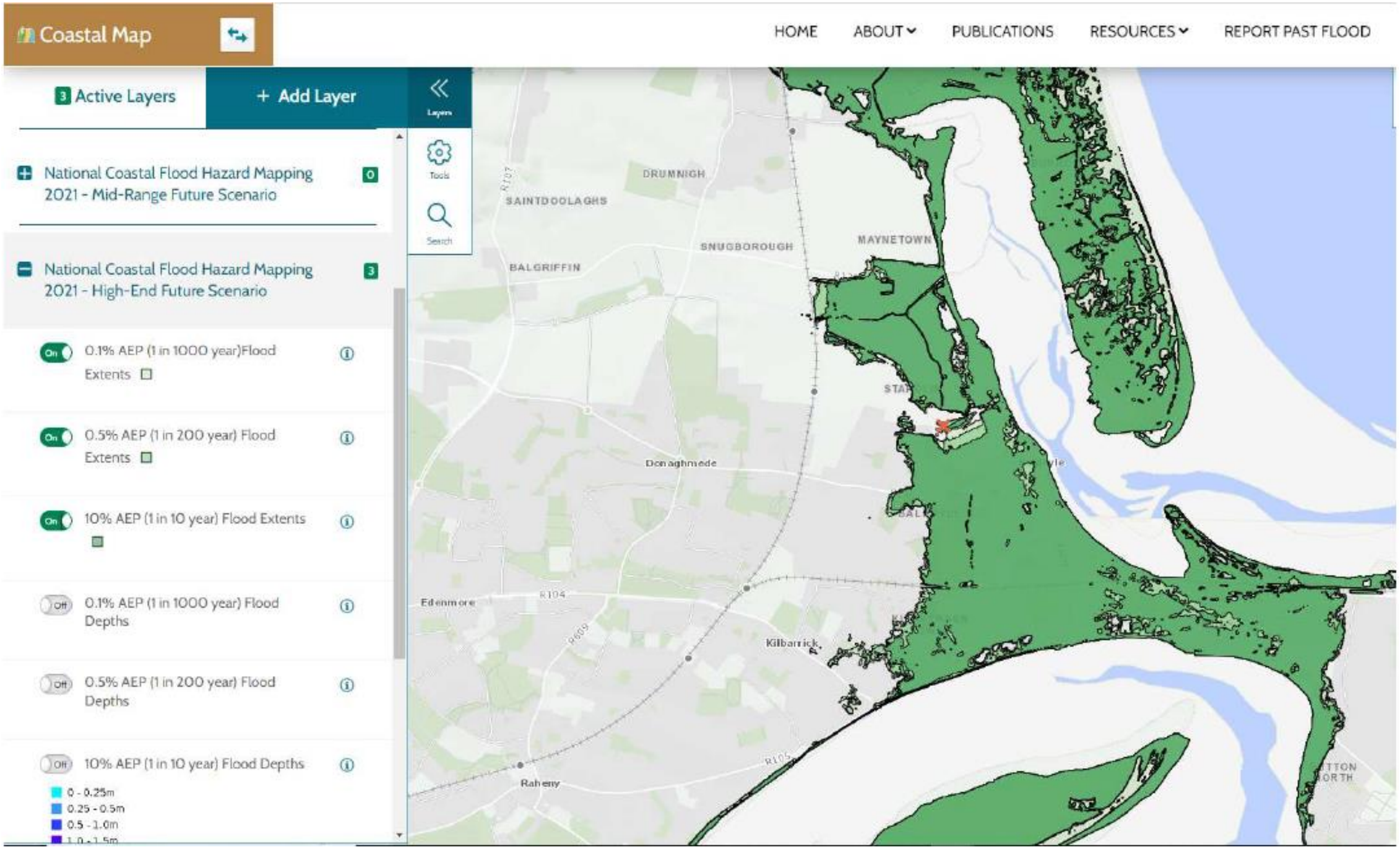
National Coastal Flood Hazard Mapping 2021 - Present Day



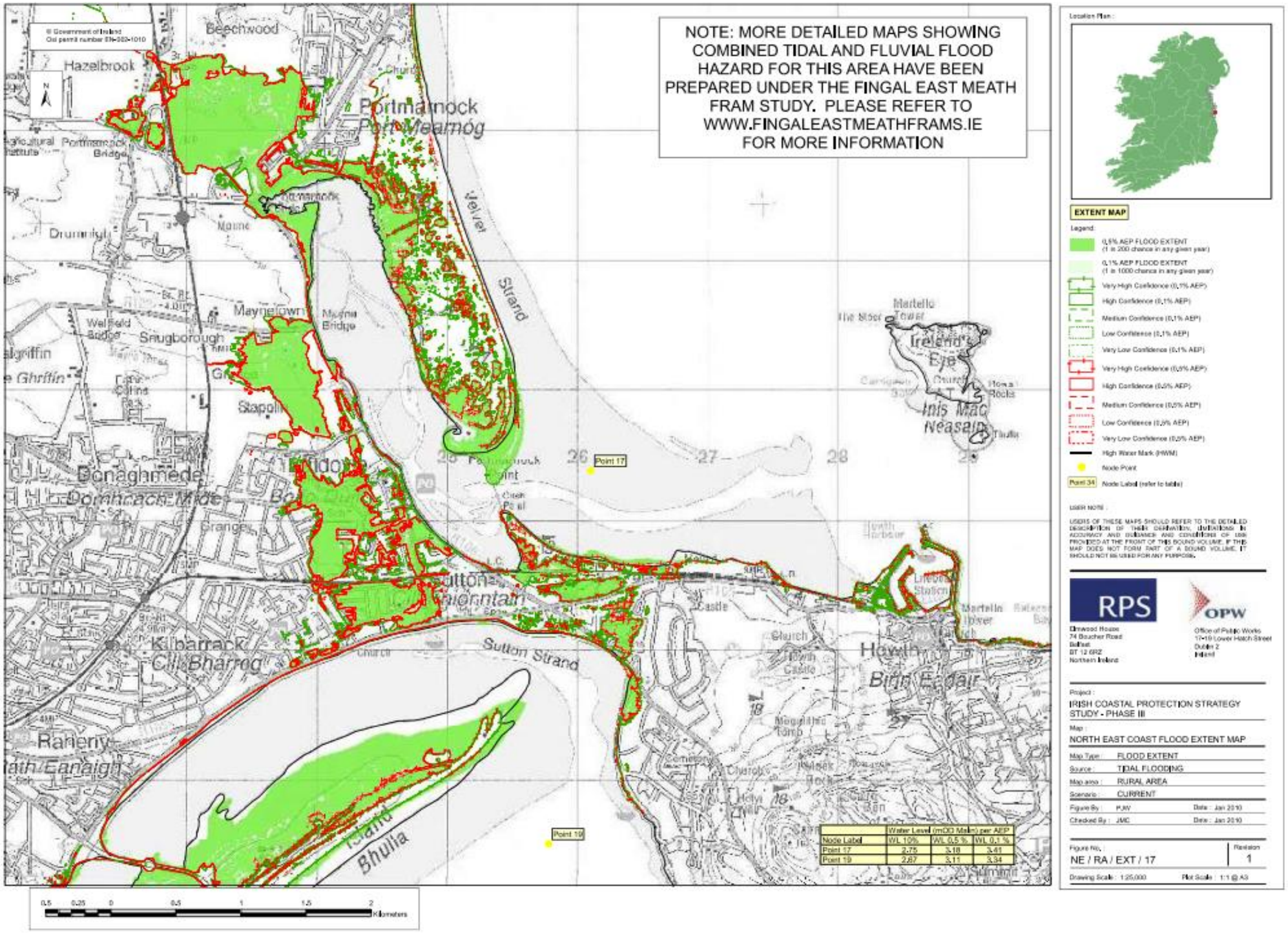
National Coastal Flood Hazard Mapping 2021 - Mid-Range Future Scenario



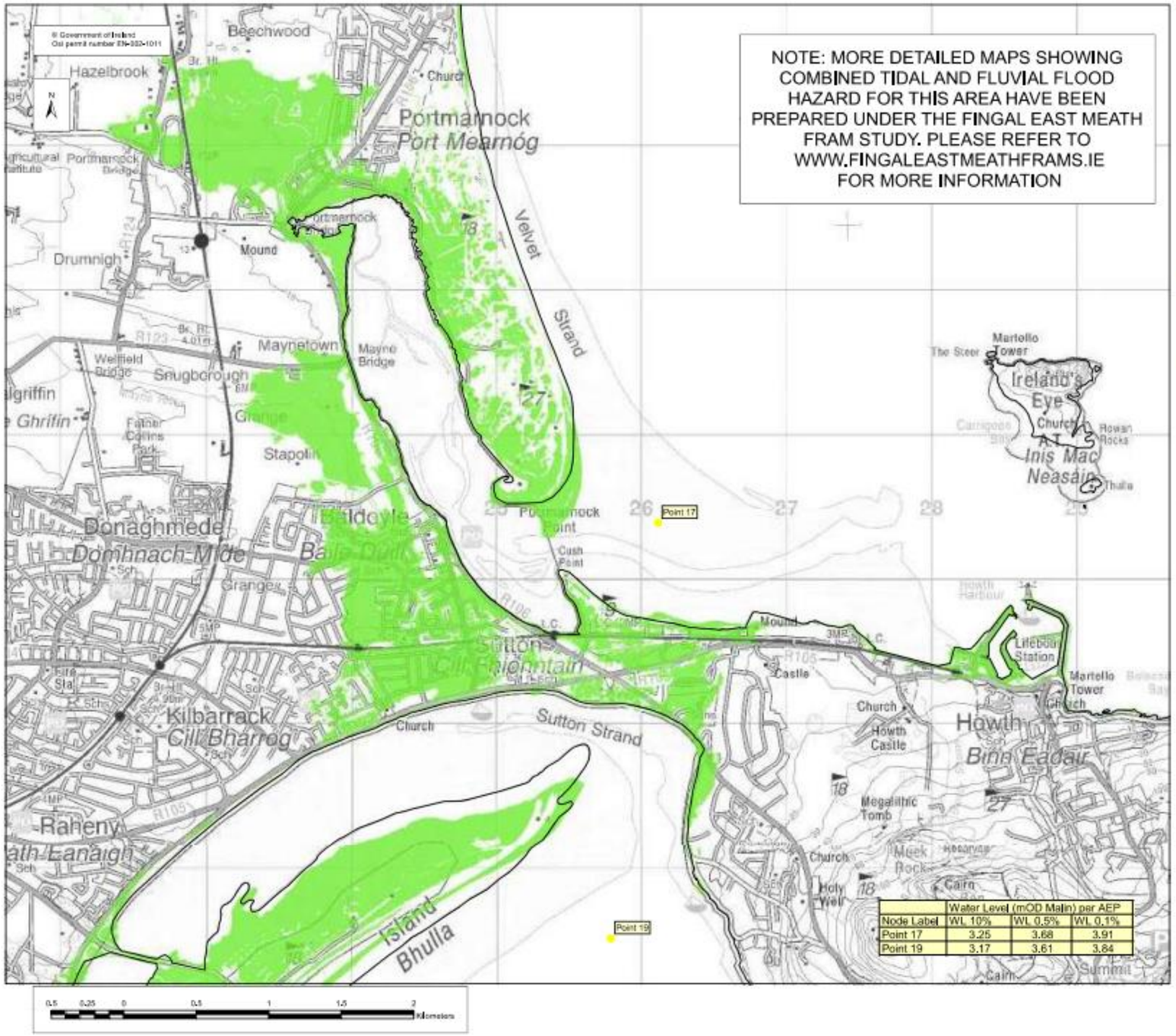
National Coastal Flood Hazard Mapping 2021 - High-End Future Scenario



IRISH COASTAL PROTECTION STRATEGY ICPSS – FLOOD MAPPING FOR CURRENT SCENARIO

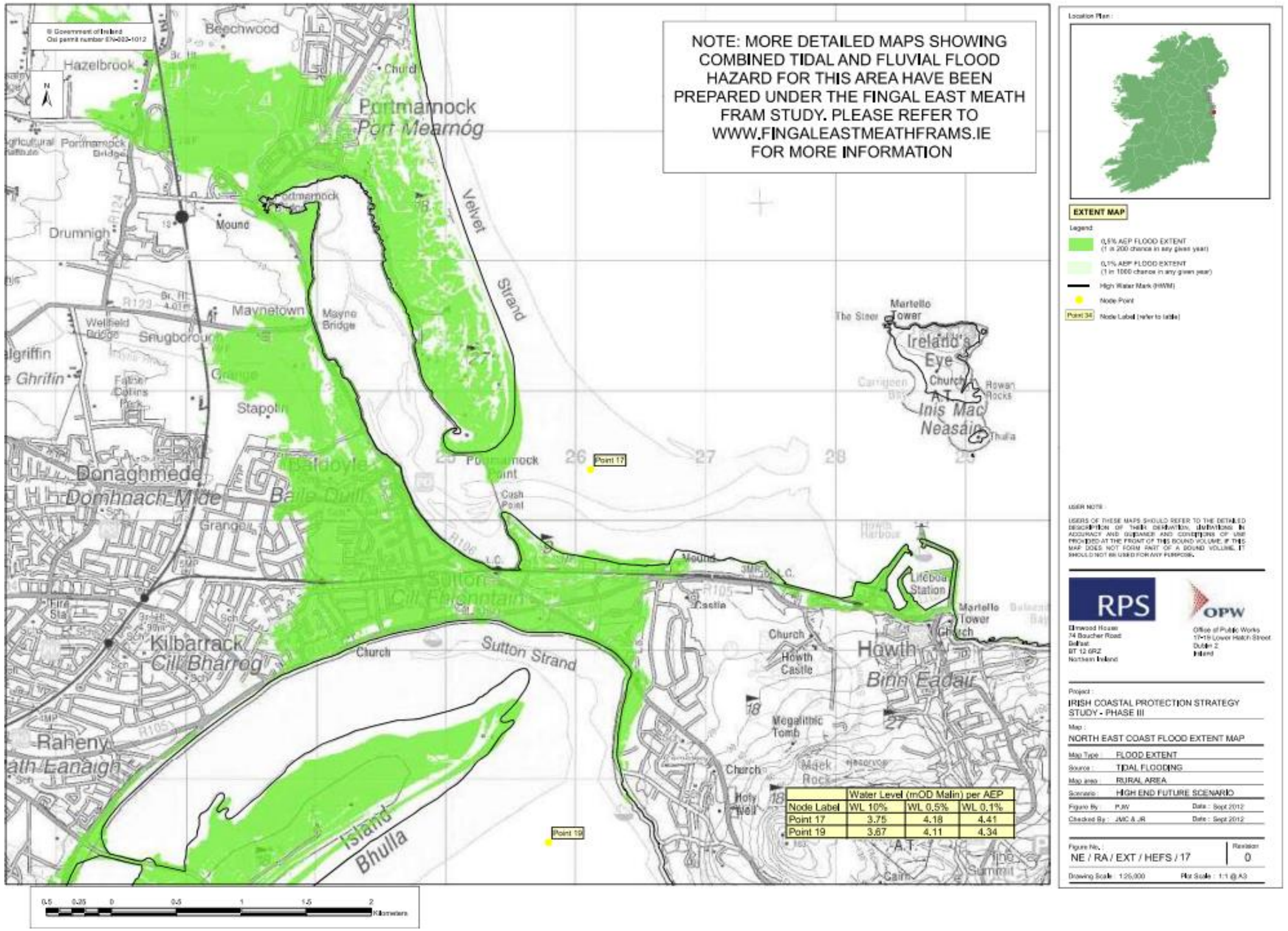


IRISH COASTAL PROTECTION STRATEGY ICPSS – FLOOD MAPPING FOR MID RANGE FUTURE SCENARIO

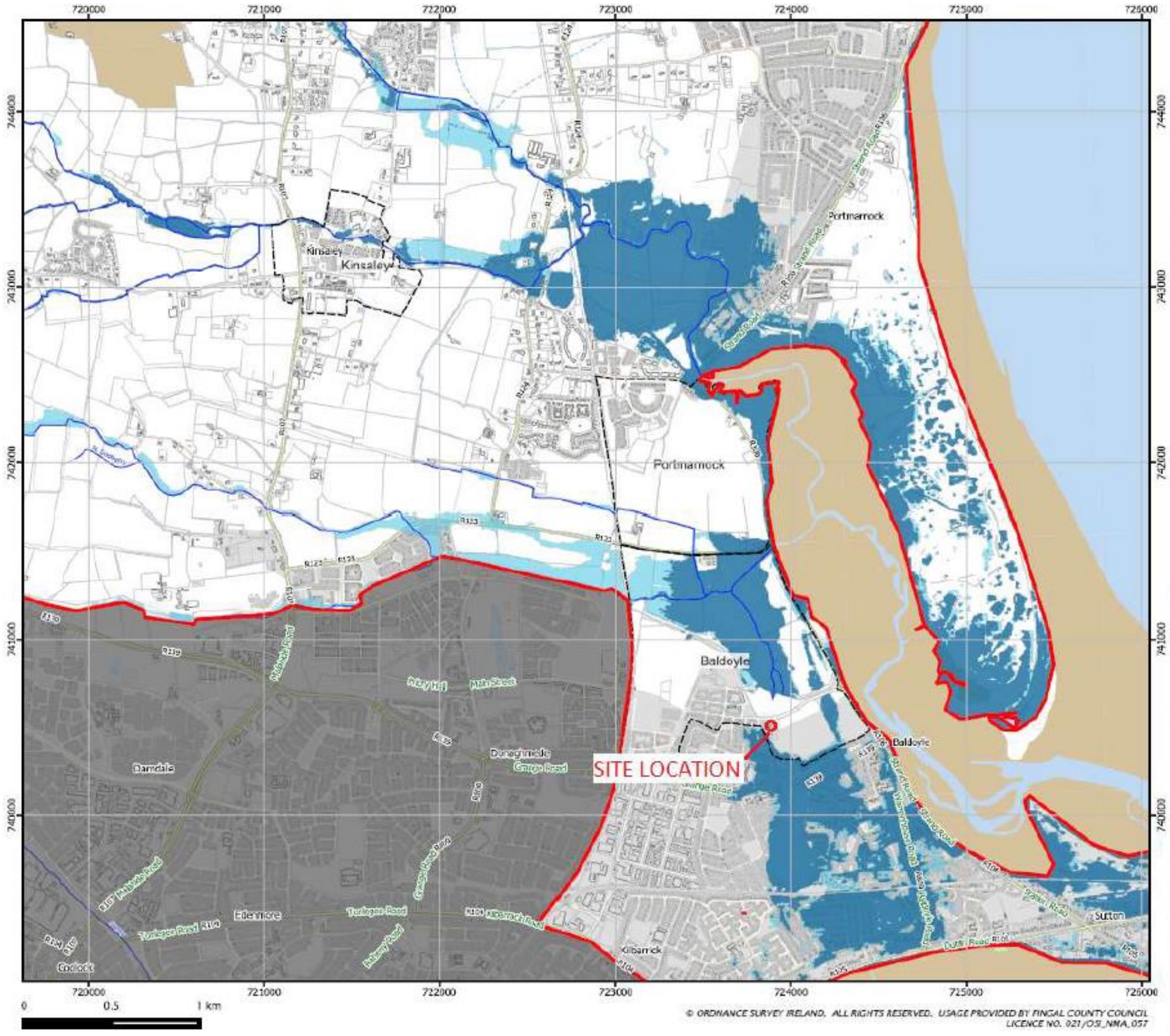


	Water Level (mOD Malin) per AEP		
Node Label	WL 10%	WL 0.5%	WL 0.1%
Point 17	3.25	3.68	3.91
Point 19	3.17	3.61	3.84

IRISH COASTAL PROTECTION STRATEGY ICPSS – FLOOD MAPPING FOR HIGH END FUTURE SCENARIO

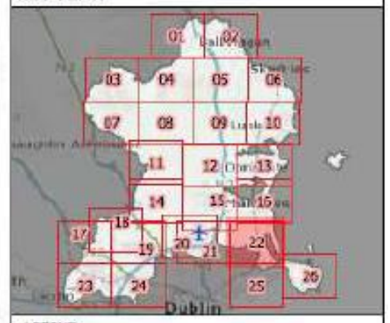


FINGAL SFRA – FLOOD ZONE MAP



MAP SERIES 22 OF 26

KEY PLAN



LEGEND

- Fingal County Administrative Boundary
- Watercourses
- LAP & Masterplan Boundaries
- Flood Zone A
- Flood Zone B
- Defended Areas

REV:	NOTE:	
05	FOR INFORMATION	05/04/2023

McCloy Consulting

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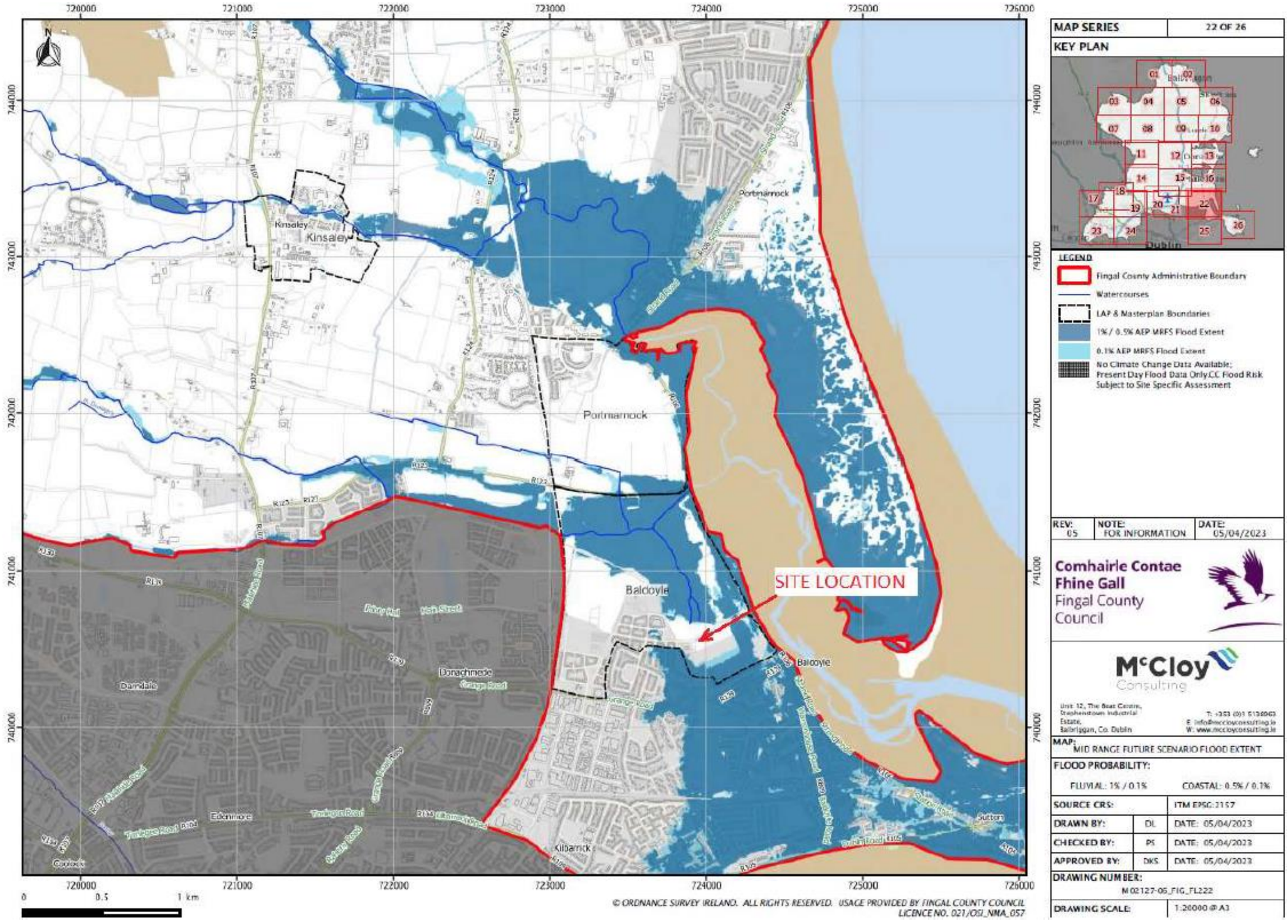
Stephenstown Industrial
Estate,
Balbriggan, Co. Dublin
T: +353 (0)1 5138063
E: info@mccloyconsulting.ie
W: www.mccloyconsulting.ie

MAP:	FLOOD ZONE MAP	
FLOOD PROBABILITY:	FLUVIAL: 1%/ 0.1%	COASTAL: 0.5% / 0.1%
SOURCE CRS:		ITM EPSG:2157
DRAWN BY:	DL	DATE: 05/04/2023
CHECKED BY:	PS	DATE: 05/04/2023
APPROVED BY:	DKS	DATE: 05/04/2023
DRAWING NUMBER:	M02127-06_FIG_FL122	
DRAWING SCALE:	1:20000 @ A3	

FINGAL SFRA – MID RANGE FUTURE SCENARIO FLOOD EXTENTS



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MAP SERIES 22 OF 26

KEY PLAN

LEGEND

- Fingal County Administrative Boundary
- Watercourses
- LAP & Masterplan Boundaries
- 1% / 0.5% AEP MRFS Flood Extent
- 0.1% AEP MRFS Flood Extent
- No Climate Change Data Available; Present Day Flood Data Only.CC Flood Risk Subject to Site Specific Assessment

REV:	NOTE:	DATE:
05	FOR INFORMATION	05/04/2023

Comhairle Contae Fhine Gall
Fingal County Council

McCloy Consulting

Unit 12, The Boat Centre, Stephenstown Industrial Estate, Balbriggan, Co. Dublin
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E: info@mccloyconsulting.ie
W: www.mccloyconsulting.ie

MAP: MID RANGE FUTURE SCENARIO FLOOD EXTENT

FLOOD PROBABILITY:

FLUVIAL: 1% / 0.1% COASTAL: 0.5% / 0.1%

SOURCE CRS:		ITM EPSG:2157
DRAWN BY:	DL	DATE: 05/04/2023
CHECKED BY:	PS	DATE: 05/04/2023
APPROVED BY:	DKS	DATE: 05/04/2023

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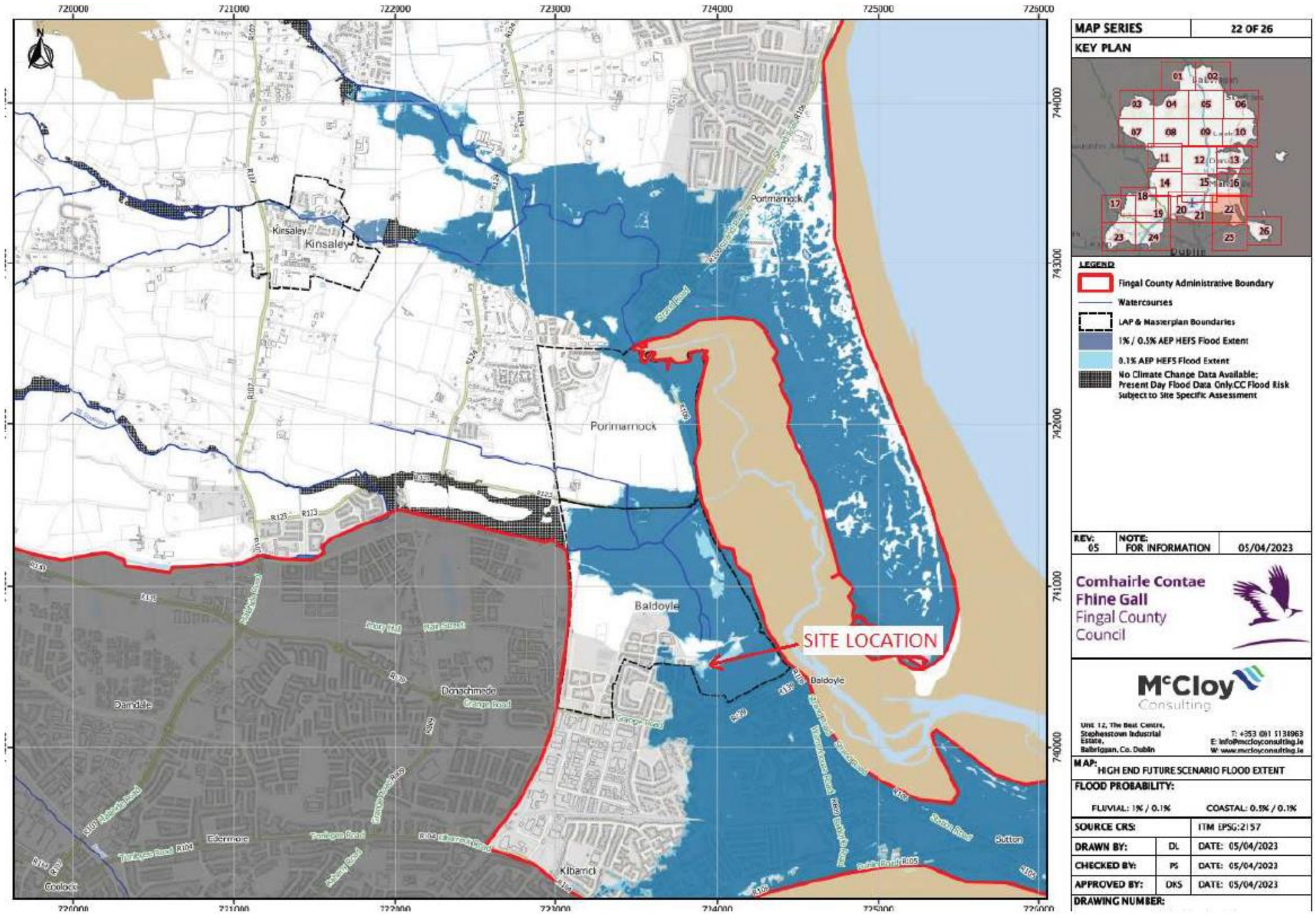
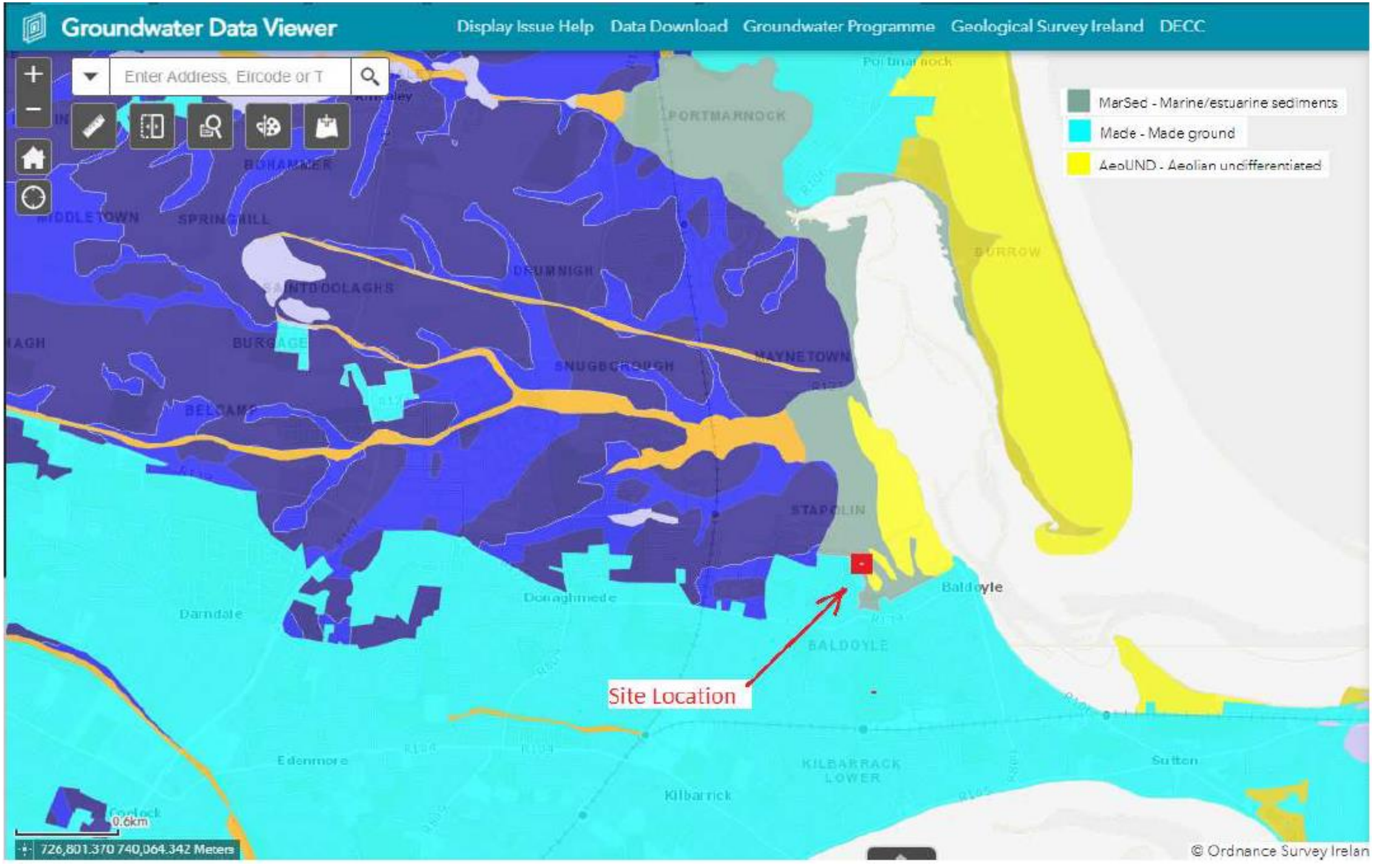
DRAWING SCALE: 1:20000 @ A3

FINGAL SFRA – HIGH END FUTURE SCENARIO FLOOD EXTENTS



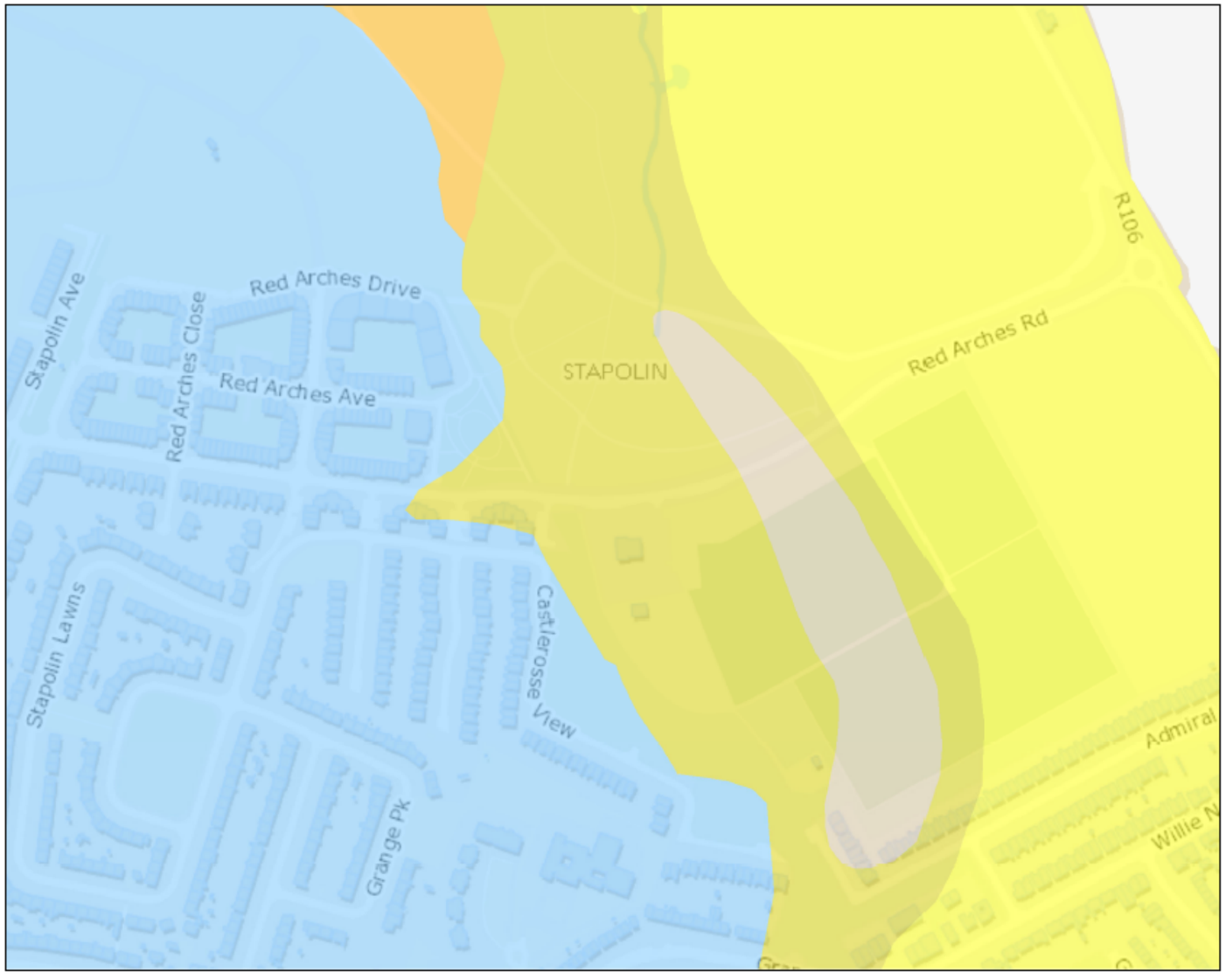
Geological Survey of Ireland: Teagasc Subsoil Mapping



Geological Survey of Ireland: Subsoil (Quaternary Sediments)

Geological Survey
Suirbhéireacht Gheolaíochta
Ireland | Éireann

Subsoil (Quaternary Sediments)



Legend

IE_GSI_Quaternary_Sediments_50...

- A, Alluvium
- Mbs, Marine beach sands
- Mesc, Esturine silts and clays
- TLs, Till derived from limestones
- Ws, Windblown sands

Scale: 1:5,000

Geological Survey Ireland

N W E S

0 0.035 0.07 0.14 mi
0 0.05 0.1 0.2 km

Map Centre Coordinates (ITM) 723,863 740,558
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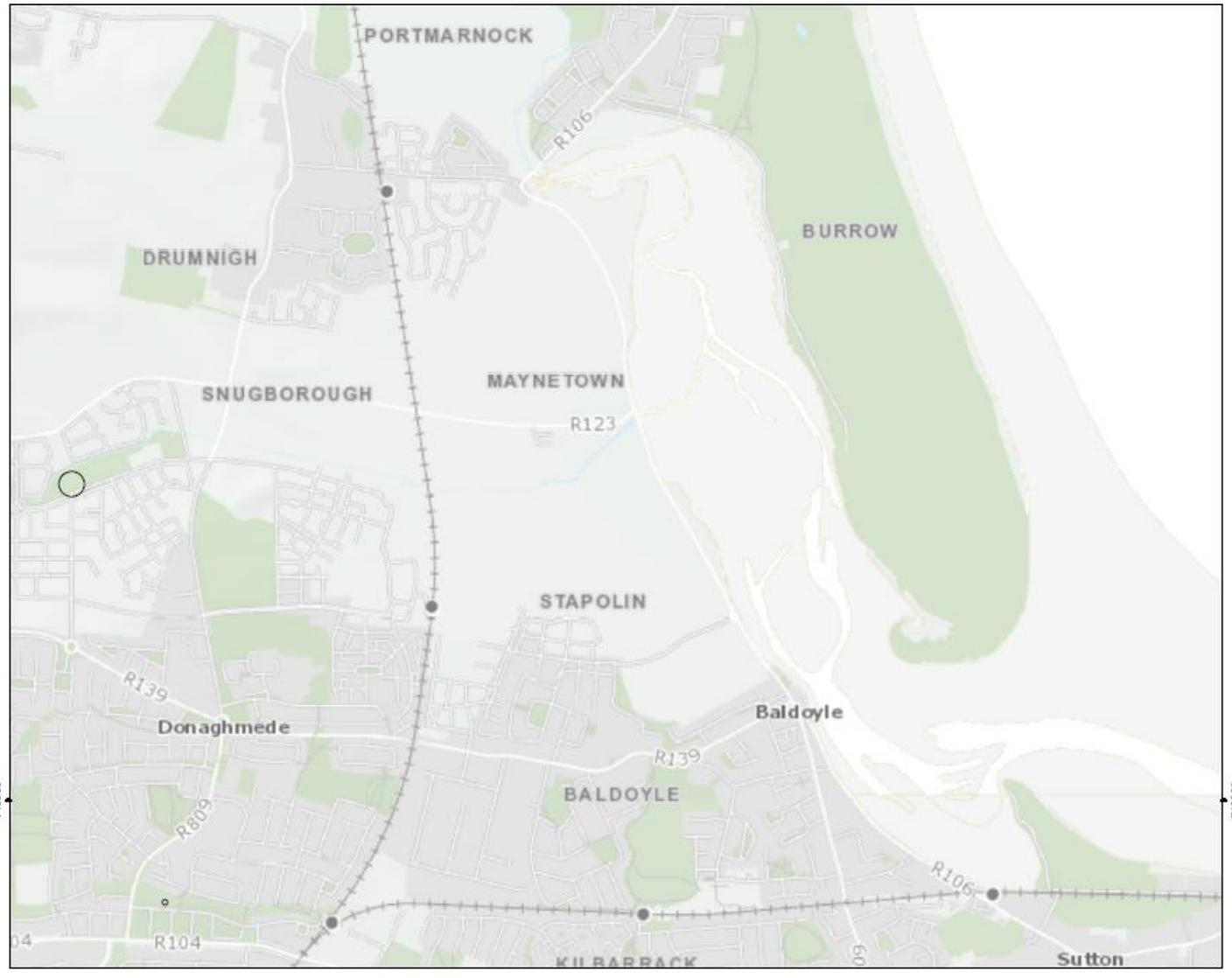
Geological Survey of Ireland – Groundwater Wells and Springs

Geological Survey
Suirbhéireacht Gheolaíochta
Ireland | Éireann

Groundwater Wells and Springs



Legend

Groundwater Wells and Springs

Scale: 1:25,000

Geological Survey Ireland

N W E S

0 0.175 0.35 0.7 mi
0 0.275 0.55 1.1 km

Map Centre Coordinates (ITM) 723,815 741,247
19/7/2023, 16:31:12

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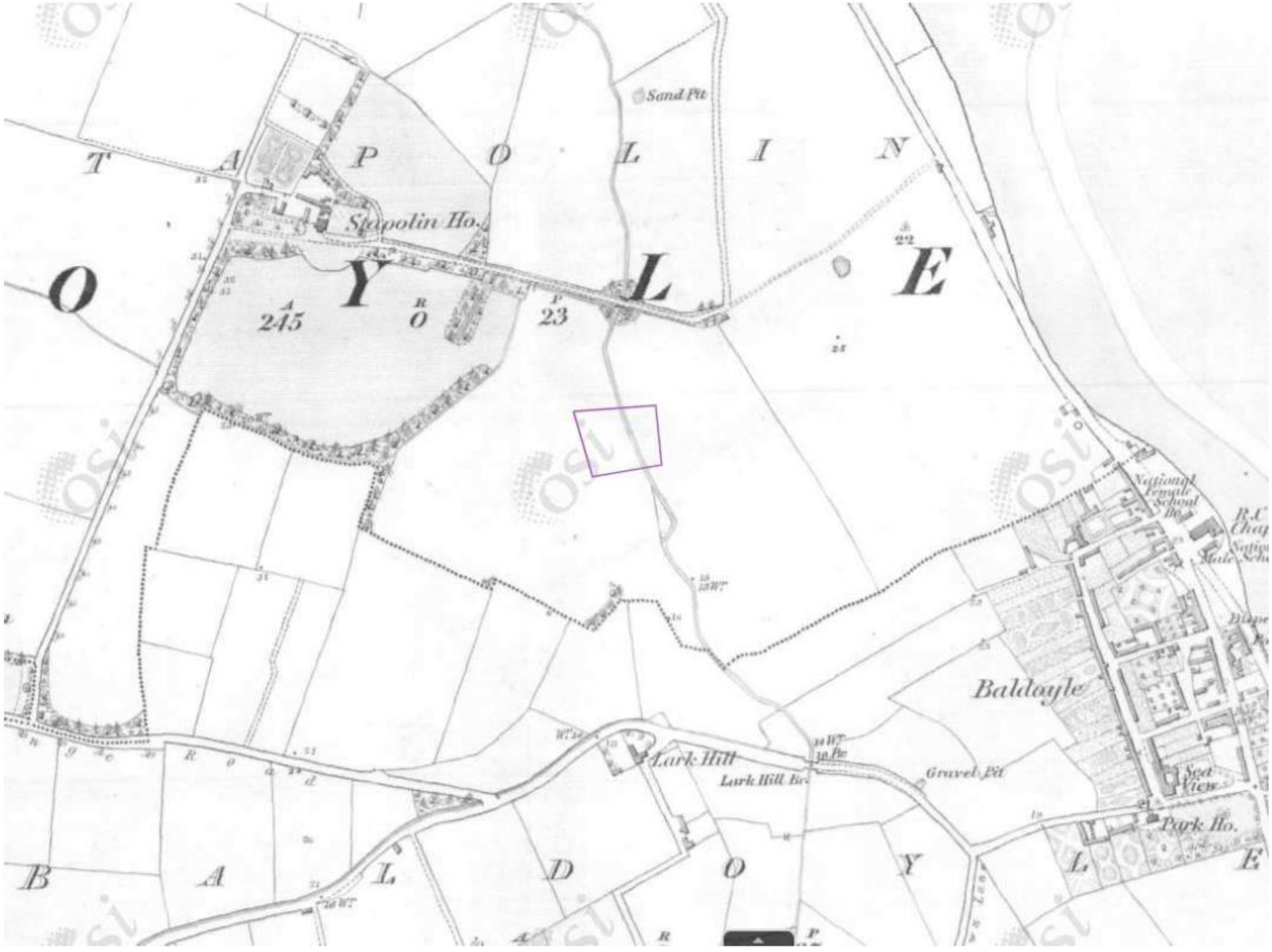

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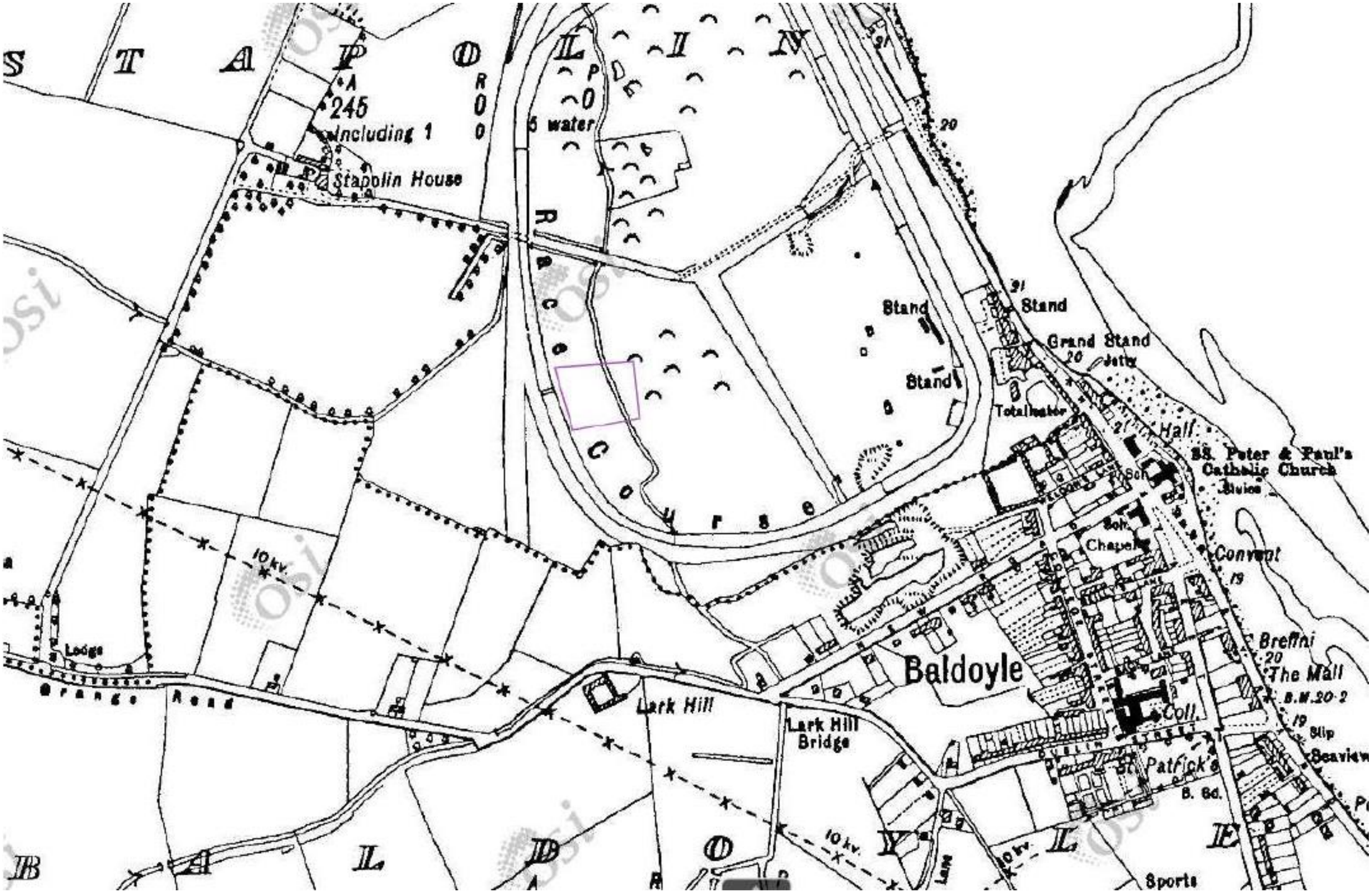

ECOLOGICAL IMPACT ASSESSMENT

PROPOSED PARK DEVELOPMENT PROJECT AT

RACECOURSE PARK,

BALDOYLE, DUBLIN 13

Prepared for Fingal County Council

Scott Cawley, College House, 71-73 Rock Road, Blackrock, Co. Dublin, A94 F9X9

Tel+353(1)676-9815 Fax +353(1) 676-9816

Document Control

Project Title	Proposed park development at Baldoyle Racecourse Park		**Project No.**	180153
Document Title	Natura Impact Statement		**Status**	Final
Revision	**Issue Date**	**Author**	**Reviewed By**	**Approved By**
D01	28/06/2019	CK/AOR	NB	CK
D02	28/06/2019	CK/AOR	NB	ACa

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This report has been prepared by Scott Cawley Ltd. in accordance with the particular instructions and requirements of our agreement with the Client, the project's budgetary and time constraints and in line with best industry standards. The methodology adopted and the sources of information used by Scott Cawley Ltd. in providing its services are outlined in this report. The scope of this report and the services are defined by these circumstances.

Where the conclusions and recommendations contained within this document are based upon information provided by others than Scott Cawley Ltd., no liability is accepted on the validity or accuracy of that information. It is assumed that all relevant information has been provided by those parties from whom it has been requested and that the information is true and accurate. No independent verification of any documentation or information supplied by others has been made.

The conclusions presented in this report represent Scott Cawley Ltd.'s best professional judgement based on review of site conditions observed during the site visit (if applicable) and the relevant information available at the time of writing. Scott Cawley Ltd. has used reasonable skill, care and diligence in compiling this report and no warranty is provided as to the report's accuracy.

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1. SUMMARY

Scott Cawley Ltd. was commissioned by Bernard Seymour Landscape Architects (BSLA), on behalf of Fingal County Council, to undertake an Ecological Impact Assessment (EcIA) for a proposed park development project at Baldoyle Racecourse Park, Baldoyle, Dublin 13 (herein referred to as "the subject lands").

This Ecological Impact Assessment (EcIA) should be read in conjunction with other documents contained within the planning application, in particular the Natura Impact Statement (NIS) which Scott Cawley Ltd. have also prepared. The purpose of the EcIA is to establish the ecological baseline within the subject lands, evaluate the ecological features present and assess the potential impacts resulting from the proposed park development. Following on from this, it is the purpose of the EcIA to recommend measures to address impacts and comply with relevant ecological legislation and policies.

The proposed development is for the construction of a public park at Baldoyle Racecourse Park in north Dublin. The proposed park development project includes, but is not limited to, the provision of cycle and pedestrian routes, including a new bridge over the River Mayne, provision of a skate park and adventure activity area, multi-use games area (MUGA), dog park, expansion of wetland habitats, creation of additional pond habitats with boardwalk/ viewing platform, provision of additional playing pitches and associated landscaping works. The subject lands currently consist a mix of diverse habitats including areas of grassland, scrub, buildings and artificial surfaces, hedgerows, agricultural lands and disturbed ground. A number of watercourses flow through the site.

A desk study was carried out on 15th July 2019, and updated on 31st January and 16th October 2020, to collect ecological information pertaining to the subject lands. Sources included the Ordnance Survey of Ireland, the National Biodiversity Data Centre, and the National Parks and Wildlife Service. A literature review of previous surveys undertaken in the vicinity of the site was also undertaken on the 19th July 2019. This literature review was updated in January 2020 to take into account the findings of specialist surveys undertaken in 2019. Field surveys undertaken by Scott Cawley comprised habitat surveys and overwintering bird surveys, specifically targeting Light-bellied Brent geese *Branta bernicla hrota*. Habitat surveys were undertaken on 18th January, 8th March and 9th April 2019 by Caroline Kelly BSc. MSc. of Scott Cawley Ltd. Overwintering bird surveys were carried out on the 26th February and 6th, 8th, 12th, 15th, 21st, 23rd, 30th March 2019. A range of previous ecological surveys (including habitats, breeding birds, bats and overwintering birds) had also been commissioned on site and these have also informed this EcIA.

Following the completion of the desk study, literature review and field surveys, designated sites, hedgerows, upper saltmarsh, reed and large sedge swamps, depositing/ lowland rivers, dry meadows and grassy verges, wet grassland, drainage ditches, hare and hedgehog, badger, bats, otter, amphibians, breeding birds, wintering birds and rare/protected flora species were identified as key ecological receptors. In the absence of any mitigation/protection measures it was concluded the proposed development will result in significant effects on many of these KERs with the magnitude of such effects ranging from local to international. Measures have been proposed to reduce impacts on all KERs to levels not considered to be significant, and to ensure compliance with Wildlife Law.

2. INTRODUCTION

2.1. QUALITY ASSURANCE

This report has been prepared by Caroline Kelly, reviewed by Niamh Burke and approved by Aebhín Cawley, of Scott Cawley Ltd.

Caroline Kelly is a Senior Ecologist at Scott Cawley Ltd. with over 5 years' professional ecological consultancy experience in preparing ecological reports and assessments for inclusion in planning applications. She holds an honours degree in Environmental Biology, from University College Dublin (UCD), and a Masters in Ecological Assessment from University College Cork (UCC). Caroline has experience in habitat survey and assessment (including Annex I habitats and legally protected sites) in a range of terrestrial, freshwater and coastal environments. She is also experienced in surveys for protected species (e.g. bats, badger and otter), bird surveys (both breeding and overwintering) and surveys for invasive species. Whilst working at Scott Cawley Ltd. Caroline has managed ecological assessments for a wide range of projects including tourism, recreational, industrial, commercial, residential, transport and renewable energy developments.

Niamh Burke is the Principal Ecologist with Coiscéim Ecology. She holds a BSc in Natural Sciences with Environmental Science and a PhD in aquatic ecology and hydromorphology. She is a Chartered Environmentalist (CEnv) with the Society for the Environment (Soc Env), a Full Member of the CIEEM and and member of the Irish Environmental Law Association (IELA). Niamh is a senior scientist with academic research and extensive consulting experience in terrestrial ecology, aquatic ecology and fluvial geomorphology. She is an experienced project manager with a full working knowledge of EIA, the planning process and relevant environmental legislation, both national and European. With a specialism in aquatic habitats, she also has experience of terrestrial species' surveys and mitigation approaches. In her extensive consultancy roles she has acted as reviewer for all ecological reporting and ensured consistency of standards and approach.

Aebhín Cawley is Director with Scott Cawley. She holds an honours degree in Zoology from Trinity College, Dublin and a postgraduate diploma in Physical Planning at Trinity. She is a Chartered Environmentalist (CEnv) with the Society for the Environment (Soc Env) and a Full Member of the CIEEM. Aebhin Cawley is an experienced ecological consultant with extensive experience in public and private sector projects including renewable energy, ports and other major infrastructural developments. Aebhín has been undertaking Ecological Impact and Appropriate Assessment work in Ireland since 2002 and has been influential in determining the direction in which EcIA and AA work is evolving in Ireland. She has delivered lectures and training on Appropriate Assessment to a range of organisations and professional institutes (including the Irish Planning Institute, the Royal Town Planning Institute, the Irish Environmental Law Association, National Roads Authority, Engineers Ireland, An Bord Pleanála and Eirgrid) and regularly provides Appropriate Assessment training to local authorities and other public sector organisations. She authored guidelines on Appropriate Assessment for the EPA and delivered training on its application to its inspectorate. Aebhin was responsible for checking and approval of this report and provided additional text where required.

2.2. AIMS

The aims of this Ecological Impact Assessment are to:

- Establish baseline ecological data for the proposed development and adjacent lands;
- Determine the ecological value of the identified ecological features;
- Assess the impact of the proposed development on ecological features of value (flora and fauna);
- Apply mitigation measures to avoid, reduce, remedy, offset or compensate impacts; and,
- Identify any residual impacts after mitigation.

Figure 1: Extent of Proposed Public Park at Baldoyle Racecourse Park, Co. Dublin and watercourses which flow through the site

3. PLANNING, POLICY AND LEGISLATION

The assessment of the likely impacts of the proposed development on ecological resources has considered legislation, policy documents, and guidelines outlined in the following section.

3.1. INTERNATIONAL AND NATIONAL LEGISLATION

The following international legislation is relevant to the proposed development:

- *Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora* (as amended); hereafter the 'Habitats Directive'.
- *Directive 2009/147/EEC;* hereafter the 'Birds Directive'.

The following national legislation is relevant to the proposed development:

- *Wildlife Act, 1976* and *Wildlife (Amendment) Act (2000)* (as amended); hereafter collectively referred to as the Wildlife Acts. The Wildlife Acts are the principal pieces of legislation at national level for the protection of wildlife and for the control of activities that may harm wildlife. All bird species, 22 other animal species or groups of species, and 86 species of flora are protected under these pieces of legislation.
- *The Planning and Development (Amendment) Act 2010* (as amended). This piece of legislation is the basis for Irish planning. Under the legislation, development plans (usually implemented at local authority level) must include mandatory objectives for the conservation of natural heritage and for the conservation of European Sites.
- *European Communities (EC) (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011* (as amended); hereafter the 'Birds and Habitats Regulations'. This legislation transposes the Habitats and Birds Directives into Irish law. It also contains regulations (49 and 50) that deal with invasive species (those included within the Third Schedule).
- *Flora (Protection) Order,* 2015. This lists species of plant protected under Section 21 of the Wildlife Act, 1976.

3.2. LOCAL AUTHORITY PLANS

The local authority for this proposed development is Fingal County Council. Plans and developments within Fingal must comply with the policies and objectives of the *Fingal Development Plan 2017-2023* (Fingal County Council, 2017), including the Plan's objectives for biodiversity and green infrastructure, which apply to ecological features within the lands. The southern portion of the lands, those that lie to the south of the Moyne Road, are located within the boundary of the *Baldoyle- Stapolin Local Area Plan (LAP)* (Fingal County Council, 2013a). The northern portion of the lands, those to the north of the Moyne Road, lie within the boundary of the *Portmarnock South Local Area Plan (LAP)* (Fingal County Council, 2013b). Plans and projects within the boundaries of these LAPs must ensure that they comply with the policies and objectives contained within the relevant LAP. It should be noted that Objective 467 of the Baldoyle – Stapolin LAP is to "*develop the Racecourse Park*" and the park proposals are discussed in both the Baldoyle – Stapolin LAP and the Portmarnock South LAP.

4. METHODOLOGY

4.1. SCOPE

The zone of influence is a distance within which the proposed works could potentially affect key ecological receptors (KERs). The zone of influence is likely to vary by KER and depends on the source of impact, the sensitivity of the receptor, and the presence of a pathway between the two.

In this instance, the key sources of potential impacts are construction works within the lands, and discharge of pollutants during the construction phase of the project. The potential receptors in this instance are designated sites (including European sites) outside of the landownership and terrestrial habitats, watercourses, breeding birds, overwintering birds and bats within the subject lands.

4.2. DESK STUDY

A desk study was undertaken on 15th July 2019, and updated on the 31st January and 16th October 2020[1], to collect any available information on the local ecological environment. The following resources assisted in the production of this report, in addition to those listed in the Reference section of this report:

- Ordnance Survey Ireland mapping and aerial photography available from OSI online GeoHive mapping resource (Ordnance Survey Ireland, 2020);
- Data on protected species and European sites, available for download and interrogation from the National Parks and Wildlife Service maps and data page (NPWS, 2020);
- Data on rare and protected species, available on the National Biodiversity Data Centre's (NBDC) Online Mapviewer https://maps.biodiversityireland.ie/Map (NBDC, 2020);
- Spatial information relevant to the planning process including land zoning and planning applications from Department of Housing Planning and Local Government web map portal (DoHPLG, 2020);
- Data on waterbodies, available for download and interrogation from the Environmental Protection Agency web map service (EPA, 2020);
- Information on soils, geology and hydrogeology in the area available for download and interrogation from the Geological Survey Ireland online Spatial Resources service (GSI, 2020);
- Information on the location, nature and design of the proposed development supplied by the applicant's design team;
- Information on the status of EU protected habitats and species in Ireland (National Parks & Wildlife Service, 2019a & 2019b); and;
- Information on the conservation status of birds in Ireland (Colhoun & Cummins, 2013).

[1] Please note that the data regarding rare/ protected species, as reviewed on the NPWS online map viewer could not be updated in October 2020 as this page is no longer available.

In addition, a literature review of the following documents was undertaken on 19th July 2019[2], in order to glean relevant information regarding the subject lands and their surroundings:

- *Baldoyle Action Plan: Ecology Assessment*. Unpublished report for Ballymore Properties Limited (Atkins McCarthy, 2000).
- *Vegetation Study of Baldoyle Racecourse Park, Co. Dublin*. Report for Fingal County Council (Fitzgerald, A., 2017).
- *Flora and Fauna Report: Baldoyle/Coast Road EIS*. Unpublished report for Ballymore Properties Limited (Goodwillie, R., 2002).
- *A bat assessment of the Racecourse Park and an evaluation of the potential for impacts from a public coastal route*. Report for Fingal County Council (Keeley, B., 2016).
- *Dublin Bat Group 2018 Surveys for Fingal County Council: Baldoyle Racecourse.* (Dublin Bat Group, 2018)
- *Winter bird study of lands around Baldoyle Bay 2016-2017*. Report to Fingal County Council from Natura Environmental Consultants. Wicklow. (Nairn, R., Fox, J. 2017).
- *Winter bird survey of the lands surrounding the Baldoyle Estuary*. Unpublished report to Fingal County Council. Birdwatch Ireland. Fingal Branch. (Pierce, S., Dillon D., 2012).
- *Natura Impact Statement for Proposed Residential Development at St. Paul's College, Sybill Hill, Raheny, Dublin 5* (Scott Cawley Ltd., 2017)
- *The Breeding Birds of Racecourse Park, Baldoyle, Co. Dublin, April-June 2018*. Report for Fingal County Council. (Pierce, S., 2018).
- *The Breeding Birds of Racecourse Park, Baldoyle, Co. Dublin. April- June 2019.* Report for Fingal County Council. (Pierce, S., 2019).
- *Baldoyle Rare Plant Survey 2019* (Denyer Ecology, 2019).
- *Flap valve management programme for the re-establishment of brackish habitats and fish in the Mayne River, Baldoyle, Co. Dublin.* Report for Fingal County Council. (Roughan & O'Donovan, 2018).

4.3. FIELD SURVEY METHODOLOGY

4.3.1. *Habitats & Flora Survey*

The subject lands and environs were surveyed on 18th January, 8th March and 9th April 2019 by Caroline Kelly of Scott Cawley. All habitats were classified using the *Guide to Habitats in Ireland* (Fossitt, 2000), recording dominant species, indicator species and/or species of conservation interest; with the Fossitt category codes given in parentheses. Plant nomenclature follows the *BSBI's List of Accepted Plant Names* (BSBI, 2007).

[2] This literature review was updated in January 2020 to incorporate the findings of studies carried out in 2019 e.g. Denyer Ecology's Rare Plant Survey 2019 and Pierce's Breeding Bird Survey 2019.

4.3.2. *Fauna Surveys*

4.3.2.1 Non-volant Mammals

Fauna surveys were carried out concurrently with the habitat and flora survey on 18th January, 8th March and 9th April 2019. Fauna were surveyed through the detection of field signs such as tracks, markings, feeding signs, and droppings, as well as by direct observation. The habitats on site were assessed for signs of usage by protected/red-listed fauna species (e.g. otter, badger etc), and potential to hold these species.

4.3.2.2 Bats

The assessment criteria outlined in Table 1 below are derived from Collins (2016)[3], and are used for the assessment of the site in terms of its suitability for commuting and foraging bats, and where relevant, the suitability of roosting habitats for bats. An inspection of the external areas of structures, including the derelict community centre, and trees within the subject lands involved a search for evidence of bats such as:

- Dead specimens;
- Bat droppings;
- Urine splashes;
- Fur-oil staining;
- Squeaking noises;
- Feeding remains (moth wings);
- Bat-fly (*Nycteribiid*) pupal cases; and/or,
- Odour.

An internal inspection was not undertaken of the existing derelict community centre due to health and safety reasons[4].

Table 1: Assessment criteria for potential suitability of proposed development sites for bats, derived from similar criteria in Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, 2016).

Suitability	Description of Roosting Habitat	Commuting and foraging habitats
Negligible	Negligible habitat features on site likely to be used by roosting bats	Negligible habitat features on site likely to be used by commuting or foraging bats
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions[5] and/or suitable surrounding habitat to	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or un-vegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat. Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub

[3] Based on our professional experience and understanding, a category of "*moderate suitability*" is not included in the assessment criteria as it is felt that this category overlaps significantly with the categories "*low suitability*" and "*high suitability*".

[4] The existing derelict community centre is unsafe to enter due to the fact the two previous fires have occurred here, and uncertainty exists regarding the structural integrity of the building.

[5] For example in terms of temperature, humidity, height above ground level, light levels or levels of disturbance.

	be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation). A tree of sufficient size and age to contain PRFs but with none seen from the ground or features seen with only very limited roosting potential.	
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats in a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub, hedgerows. Linked back gardens, river valleys, streams and woodland edge. Habitat that is connected to the wider landscape that could be used by foraging bats such as trees scrub, grassland or water. Site is close to and connected to a known roost.

Bat surveys had previously been undertaken in the subject lands in recent years and therefore bat surveys were not carried out in 2019. Data was available for bat surveys conducted in 2016 and 2018 and the results of these surveys were used to inform this EcIA.

4.3.2.3 Birds

Breeding bird surveys have been carried out in the subject lands since 2013. The most recent available data for breeding bird surveys is from surveys carried out between 11th April and 13th June 2019. The results of these surveys, along with any *ad-hoc* recordings noted during Scott Cawley habitat surveys, have been used to inform this EcIA.

Overwintering bird surveys had been carried between November 2016 and April 2017 and the resulting report on the findings of these surveys has informed this EcIA. In addition to these surveys eight overwintering bird surveys, specifically targeting Brent geese, were conducted on the Red Arches playing pitches and an area of amenity grassland located within the proposed Baldoyle Racecourse Park site, on the following dates: 26th February and 6th, 8th, 12th, 15th, 21st, 23rd, 30th March 2019. Importantly, these surveys included two weekend dates (23rd and 30th March). Weekend surveys ensured that the survey schedule took cognisance of the different level of activity and associated disturbance, which the geese would be exposed to, and react to, on an average weekend day.

Two surveyors carried out these surveys with one surveyor being stationed at the Red Arches playing pitches and the second surveyor positioned on the area of amenity grassland contained within the subject lands (see Figure 2 for clarity). The weather and wind speed was recorded for each survey.

Surveys began with a check of a known roosting site in Baldoyle Bay, close to the subject lands (see Figure 2). Roost checks were carried out close to dawn. Following on from this, the two surveyors covered the playing pitches at Red Arches and the area of amenity grassland to the north of this, respectively, until sunset. Any movements of geese or other wetland bird species were noted and any geese which landed on either of the two survey sites were recorded. The duration that groups of geese spent at each survey site was noted, as was their behaviour. Where no geese were present on site, predefined transects were walked to detect signs of previous goose activity, such as droppings. Each transect comprised 10 recording stops. At each stop an area of 1m^2 was examined for the following features:

- Number of goose droppings present;
- Average sward height;
- Percentage bare ground;
- Percentage grass cover; and;
- Percentage forb cover.

In addition, at both sites surveyed, the nature of boundary features was recorded (e.g. presence of hedgerows or walls etc and height of same). The presence of tree species within the site was also noted.

Disturbance events were recorded also. A description of the disturbance and the time at which it took place was noted. The intensity of the disturbance and the associated reaction was evaluated, as per the criteria noted in Appendix 10 (Disturbance Assessment) of the Baldoyle Bay SPA Conservation Objectives Supporting Document (NPWS, 2012) (see Table 2 for criteria used). Following completion of the survey, the frequency of disturbance events was assessed and scored (e.g. the frequency of disturbance events was assessed based on the number of times that disturbance (e.g. loose dog) was noted across the survey period). Each disturbance event was subsequently scored based on the cumulative score of the three aspects noted; frequency/ duration, intensity and response.

Table 2: Disturbance Assessment Criteria used during the overwintering bird surveys (Feb-March 2019).

Disturbance Assessment Criteria:						
Frequency/ Duration	**(A) Timing Score**	**Intensity[6]**	**(B) Scope Score**	**Response**	**Severity Score (C)**	**Total Individual Score**
Continuous	3	Active, High Level *e.g* mowing grass, loose dog	3	Birds leave the site and do not return for a period > 5mins	3	**Total Score (A)+(B)+(C)** Score 0-3 = Low Scores 4-6 = Moderate Scores 7-9 = High
Frequent (observed several times over survey period)	2	Medium Level *e.g* people walking with dog on lead in close proximity to geese	2	Birds are flushed from the site but return after a short period (within 5 mins) i.e. after disturbance has ceased	2	
Infrequent (observed once or twice over survey period)	1	Low Level *e.g* solitary walker (no dog) walking around perimeter of site, not too	1	Most birds walk away from source of disturbance but remain in the site	1	

[6] Based on a combination of field survey observations and best expert opinion

		close to birds location				
Rare (known to occur but not observed during survey period)	0	Very Low Level *e.g* activities which impart little effect on birds	0	Birds lift head and stop feeding	0	

Figure 2: Sites Surveyed (blue hatched) for Brent Geese during 2019 surveys, in relation to the overall site boundary (red line).

4.3.3. *Limitations of Field Surveys / Data Deficiencies*

Surveys for Light-bellied Brent Geese, conducted by Scott Cawley Ltd. in 2019, were carried out in a limited period (one visit in February and seven visits in March). As a result, the full picture of Light-bellied Brent goose movements within the subject lands could not been captured. Ideally surveys would have been carried out monthly for the full wintering bird season (October- March). Given the results obtained from the surveys in February and March this is not seen to be a significant limitation because it is highly unlikely that bird usage of the site during previous winter months would have been dramatically different, given the size of the study sites. Furthermore, the availability of previous survey data, as outlined in the literature review, has also been considered in this assessment, and therefore the limitations associated with the winter bird surveys conducted in 2019 are not significant.

Previous overwintering bird surveys were conducted in the Baldoyle Bay area during the winter of 2016/17 (Nairn & Fox, 2017). Whilst the overwintering bird surveys carried out by Scott Cawley Ltd. in 2019 focused on Brent geese, the data from the 2016/17 surveys was used to inform this EcIA with respect to other wintering bird species in the locality of the subject lands. Given the abundance of available desktop data regarding overwintering bird activity within the Baldoyle Bay area no significant limitation exists regarding the collation of data regarding overwintering bird activity on site.

No bat surveys were carried out on site during the 2019 survey season. Previous bat activity data collected during 2016 and 2018 was used to inform this EcIA. The 2016 bat survey was carried out on two dates in September 2016- 4th and 13th September (Keeley, 2016). Transects were limited to roadways surrounding the site and wider environs. In comparison the survey conducted by the Dublin Bat Group on 21st August 2018, covered the internal areas of the subject lands, from the Red Arches road to the Mayne River. This survey comprised a dusk activity survey which commenced 15 minutes after sunset and had a duration of 2.5 hours (Dublin Bat Group, 2018). No data is available for the portion of the site which lies to the north of the Mayne River. The only existing building contained within the proposed development site is the existing derelict marketing suite, which due to health and safety reasons, could not be accessed internally. Given the level of damage to the marketing suite, caused by two previous fires, the building is not deemed to offer significant potential to roosting bats and therefore there is no risk of a significant bat roost being present. The development of a community centre in place of the existing marketing suite will be sought under a separate planning application and therefore the absence of surveys/ inspections for this building is not considered a limitation for the proposed development. Furthermore, the site has little in the way of tree cover or treelines/hedgerows to support commuting and foraging bats. The fact that data is limited to 2016 and 2018 surveys is not seen to be a significant limitation given the lack of linear features to support commuting and foraging bats and considering the nature of the proposed development (the overall park development plan aims to increase the overall biodiversity value of the site).

Whilst no dedicated breeding bird survey was carried out by Scott Cawley Ltd. in 2019, *ad- hoc* recordings of breeding birds were made during the habitat surveys carried out. Additional data in relation to breeding birds was gleaned from a report outlining the results of breeding bird surveys carried out between 11th April and 13th June 2019 (Pierce, 2019). Furthermore, it is worth noting that breeding bird surveys of the proposed development site have been carried out on an annual basis since 2013.The fact that dedicated breeding bird surveys were carried by Pierce in 2019, and that this information is available to inform this report, means that there is no limitation regarding the availability of breeding bird data from the site.

The habitats on site were surveyed outside of the optimal survey season for most higher plants, which is generally taken as April- September inclusive. Whilst one of the survey dates occurred within the optimal survey period (April 9th) it is worth noting that this is very early on in the survey season. Due to the nature of the habitats present within the subject lands, and considering the fact that previous botanical studies had taken place in the eastern part of the site between June and September 2017 (Fitzgerald, 2017), as well as surveys for rare flora carried out between June and September 2019 (Denyer Ecology, 2019), the fact that habitat surveys conducted by Scott Cawley in 2019 were conducted during the sub-optimal survey season is not considered to be a significant limitation.

With regards the desk study, the data for species records held by record centres and statutory bodies (such as NBDC) is often provided on an *ad-hoc* basis by recorders. These records can only provide an indication of what species might be found in an area; they do not constitute full and complete species lists. Absence of certain species from these sources does not confirm absence of species in the area.

Access to some areas of the site was restricted due to the presence of livestock within some fields. In such instances habitats were identified based on what could be visually observed from the fence/ hedge boundary.

4.4. ECOLOGICAL EVALUATION AND IMPACT ASSESSMENT

4.4.1. *Basis of Site Evaluation*

The basis of assessment of ecological value (Appendix 1) and significance of the site for habitats and species follows *Guidelines for Assessment of Ecological Impacts of National Road Schemes* (NRA, 2009) and is consistent with *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine* (CIEEM, 2018).

4.4.2. *Impact Assessment*

In accordance with *NRA guidelines* (2009), impact assessment is only undertaken of '*Key Ecological Receptors*' (KERs). KERs are within the zone of influence[7] of the development and are "*both of sufficient value to be material in decision making and likely to be affected significantly"*. To qualify as KERs, features must be of local importance (higher value) or higher. Features of lower ecological value are not assessed.

Impacts are described as being either significant or not significant. Broadly, significant effects encompass impacts on structure and function of defined sites, habitats or ecosystems and the conservation status of habitats and species (including extent, abundance and distribution) (CIEEM, 2018). In this instance, effects are qualified with reference to a geographic scale as outlined in Appendix 1 of this report.

[7] In accordance with NRA (2009) guidelines, the zone of influence is an important term to define the receiving environment for the activities associated with the project and the biophysical changes that are likely to occur. The zone of influence is the 'effect area' over which change is likely to occur. This differs for different species and habitats due to varying sensitivities to potential impacts.

5. DESCRIPTION OF EXISTING ENVIRONMENT

5.1. GENERAL SITE OVERVIEW AND SURROUNDINGS

The subject lands are located at Baldoyle Racecourse Park to the west of the Coast Road in Baldoyle, Dublin 13. The lands are centred on Irish Grid Reference O 23828 41064. The majority of the lands are composed of grasslands (both modified and semi-natural), scrub, hedgerows, saltmarsh, watercourses and associated habitats, and disturbed ground. The existing derelict marketing suite and associated car park are located within the subject lands, just to the south of Red Arches road.

The Dublin- Belfast railway line forms the north-west boundary of the site and the Coast Road runs to the east of the eastern boundary (see Figure 1 for full extent of the site). According to the EPA's online map viewer[8], a number of watercourses flow through the subject lands including the Snugborough River, Mayne River, Maynetown Stream and Snugborough Stream. The Snugborough Stream and Maynetown Stream are both tributaries of the Snugborough River, which in turn discharges into the Mayne River within the subject lands. The Mayne River then flows under the Coast Road and discharges into the transitional waters of the Baldoyle Bay.

5.2. DESIGNATED SITES

Special Areas of Conservation (SAC) are designated under the EC Habitats Directive (92/43/EEC), as amended, which is transposed into Irish law through a variety of legislation including the Birds and Habitats Regulations and the Planning and Development Acts. The legislation enables the protection of certain habitats (listed on Annex I of the Directive) and/or species (listed on Annex II). Special Protection Areas (SPAs) are designated under the Birds Directive (2009/147/EC). This allows for the protection of protected bird species listed on Annex I of the Directive, regularly occurring populations of migratory species (such as ducks, geese or waders), and areas of international importance for migratory birds.

There are 18 European sites within the vicinity of the proposed development, although only those within Baldoyle Estuary and the Irish Sea are connected to the proposed development. The proposed development site is connected to these European sites via the surface water features, namely the River Mayne. Furthermore, the proposed development site overlaps with Baldoyle Bay SAC such that a portion of the SAC is contained within the proposed development site (see Figure 3).

Baldoyle Bay SPA is designated for the following bird species; Light-bellied Brent Goose *Branta bernicla hrota*, Shelduck *Tadorna tadorna*, Ringed Plover *Charadrius hiaticula*, Golden Plover *Pluvialis apricaria*, Grey plover *Pluvialis squatarola* and Bar-tailed Godwit *Limosa lapponica*. Field surveys of the subject lands undertaken between February and April 2019 recorded large numbers of Light-bellied Brent Geese foraging on the playing pitches at Red Arches. Small numbers of Shelduck were also recorded on the River Mayne. The lands are not connected to any European sites outside of Baldoyle Estuary and/or the Irish Sea via groundwater or other features. European sites located within the vicinity of the proposed development site are displayed in Figure 4.

[8] EPA Online Map Viewer Available at: https://gis.epa.ie/EPAMaps/[Accessed 22/02/2021]

Please refer to the Natura Impact Statement (NIS) (Scott Cawley, 2020) which has been prepared to assess the proposed development's capacity to impact European designated sites.

National Heritage Areas (NHAs) are designations under the Wildlife Acts in order to protect habitats, species or geology of national importance. The boundaries of many of the NHAs in Ireland overlap with European sites. Although many NHA designations are not yet fully in force under this legislation (referred to as 'proposed NHAs' or pNHAs), they are offered protection in the meantime under planning legislation which requires that planning authorities give recognition to their ecological value[9].

There are no NHAs within the vicinity of the proposed development site. A total of 17 pNHAs are located within the vicinity of the proposed development site; Rogerstown Estuary pNHA, Portraine Shore pNHA, Lambay Island pNHA, Malahide Estuary pNHA, Feltrim Hill pNHA, Sluice River Marsh pNHA, Santry Demesne pNHA, Baldoyle Bay pNHA, Ireland's Eye pNHA, Howth Head pNHA, North Dublin Bay pNHA, Royal Canal pNHA, Grand Canal pNHA, Dolphins, Dublin Docks pNHA, South Dublin Bay pNHA, Booterstown Marsh pNHA and Dalkey Coastal Zone and Killiney Hill pNHA. Connections exist between the proposed development site and the following pNHAs; Baldoyle Bay pNHA, Ireland's Eye pNHA and Howth Head pNHA. The boundary of Baldoyle Bay pNHA follows that of Baldoyle Bay SAC, such that a portion of the pNHA is also contained within the proposed development site. Ireland's Eye pNHA and Howth Head pNHA lie within the Irish Sea and are therefore connected to the proposed development site by means of surface water features- the River Mayne which flows through the proposed development site, discharges into the transitional waters of Baldoyle Bay which in turn discharges into the Irish Sea. No other connections between the proposed development site and pNHAs exist. Nationally designated sites located within the vicinity of the proposed development site are displayed in Figure 5.

[9] Source: NPWS Website. Available online at www.npws.ie/site (Accessed 27/09/2016)

Figure 3: European sites in the immediate locality of the proposed development site and the hydrological connections which exist between them.

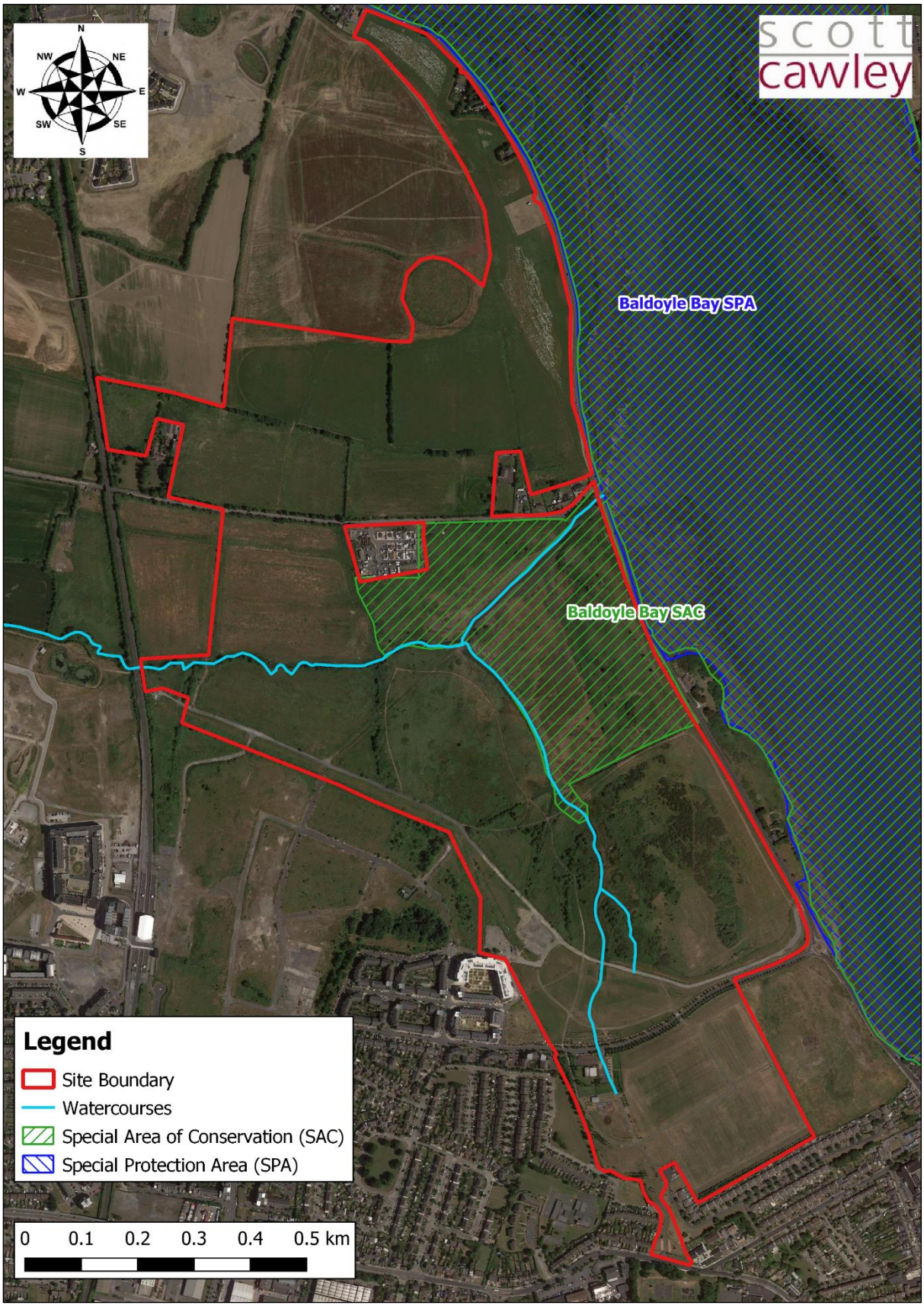


Figure 4: European sites in the vicinity of the proposed development site.

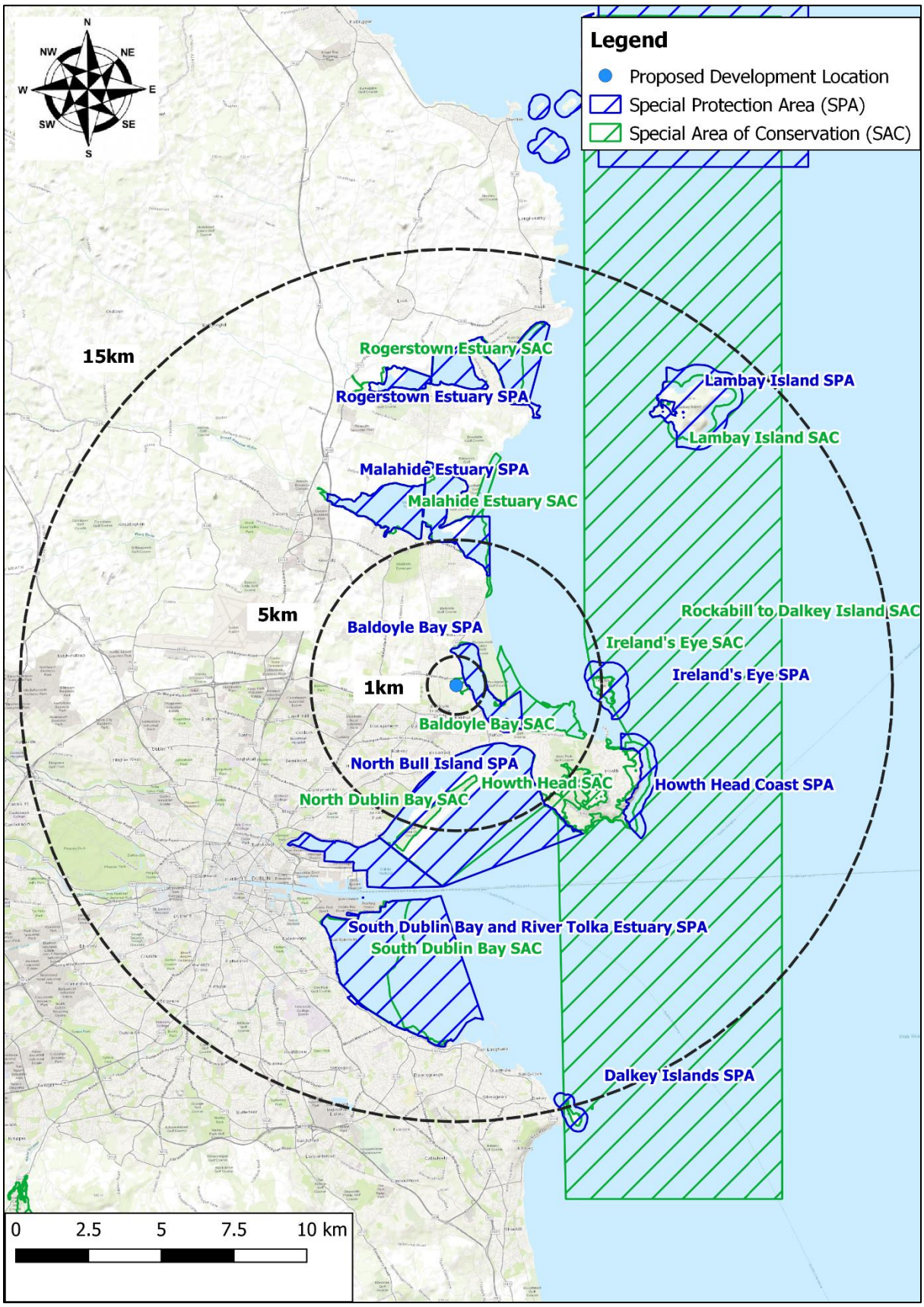
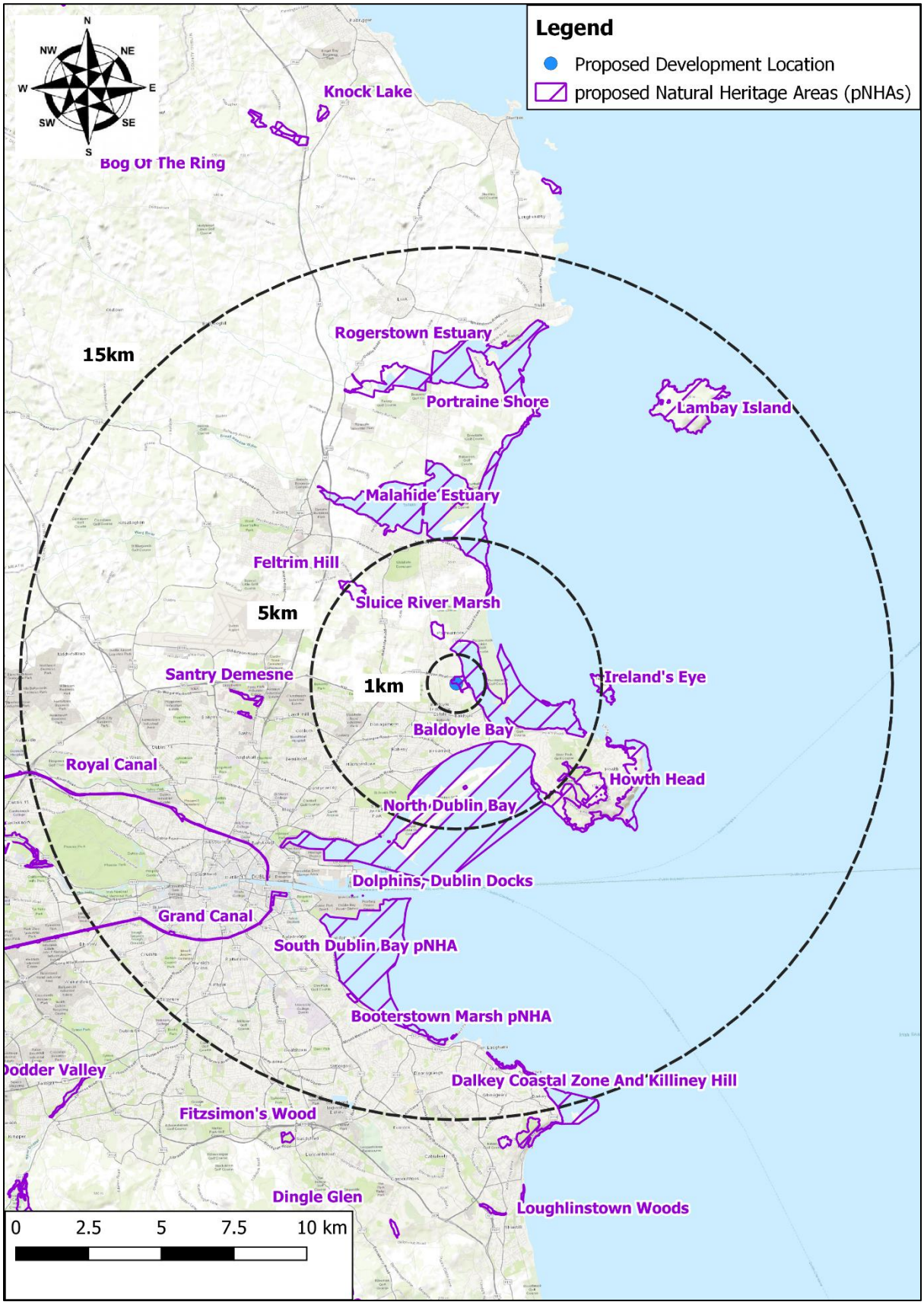


Figure 5: Nationally designated sites within the vicinity of the proposed development site.



5.3. RESULTS OF DESK STUDY

5.3.1. *Literature review*

In addition to the ecological surveys carried out by Scott Cawley Ltd. and described in Section 4.2 above, numerous ecological surveys have been carried out on the proposed development site and the surrounding lands over the last two decades (e.g. Atkins McCarthy, 2000; Goodwillie, 2002; Keeley, 2016; Fitzgerald, 2017; Nairn and Fox, 2017; Scott Cawley Ltd., 2017; Pierce, 2018; Roughan & O'Donovan, 2018; Pierce, 2019; and; Denyer Ecology, 2019). These surveys have predominantly focused on the flora of the habitats within the subject lands and the bird species using these habitats.

Flora

Atkins McCarthy (2000) concluded from their study that the core areas of ecological interest on the proposed development site include some diverse areas of grassland, riparian grasslands and saltmarsh communities. They determined that the areas of extensive scrub-grassland mosaic were a potentially important foraging resource for raptors, particularly owls and Kestrel *Falco tinnunculus*. Goodwillie (2002) found the central area of the proposed park development to be the most diverse section of the site in terms of habitat type, containing: stream, reed bed, wet grassland and hedgerows.

Four rare plant species, associated with freshwater and brackish water conditions, were noted in both reports. These plant species include: Borrer's Saltmarsh grass *Puccinellia fasciculata*, Meadow Barley *Hordeum secalinum*, Knotted Hedge-parsley *Torilis nodosa*, and Brackish Water-crowfoot *Ranunculus baudotii*. However, a more recent study conducted by Fitzgerald (2017) noted the absence of these species during an intensive survey.

Meadow Barely is legally protected in Ireland as it is listed on the Flora Protection Order (FPO) 2015. It was first recorded within the subject lands in 1989 and was again recorded in 1991 (Doogue *et al*., 1998). It was originally identified by the banks of the Mayne River, where a drainage ditch meets the river. It has not been re-found at the site since 1991.

Brackish Water-crowfoot is an extremely rare species in Co. Dublin. It was first recorded within the subject lands in 1902 and was re-found in pools and muddy ground near the Mayne River to the east of the site in 1991 (Doogue et al., 1998).

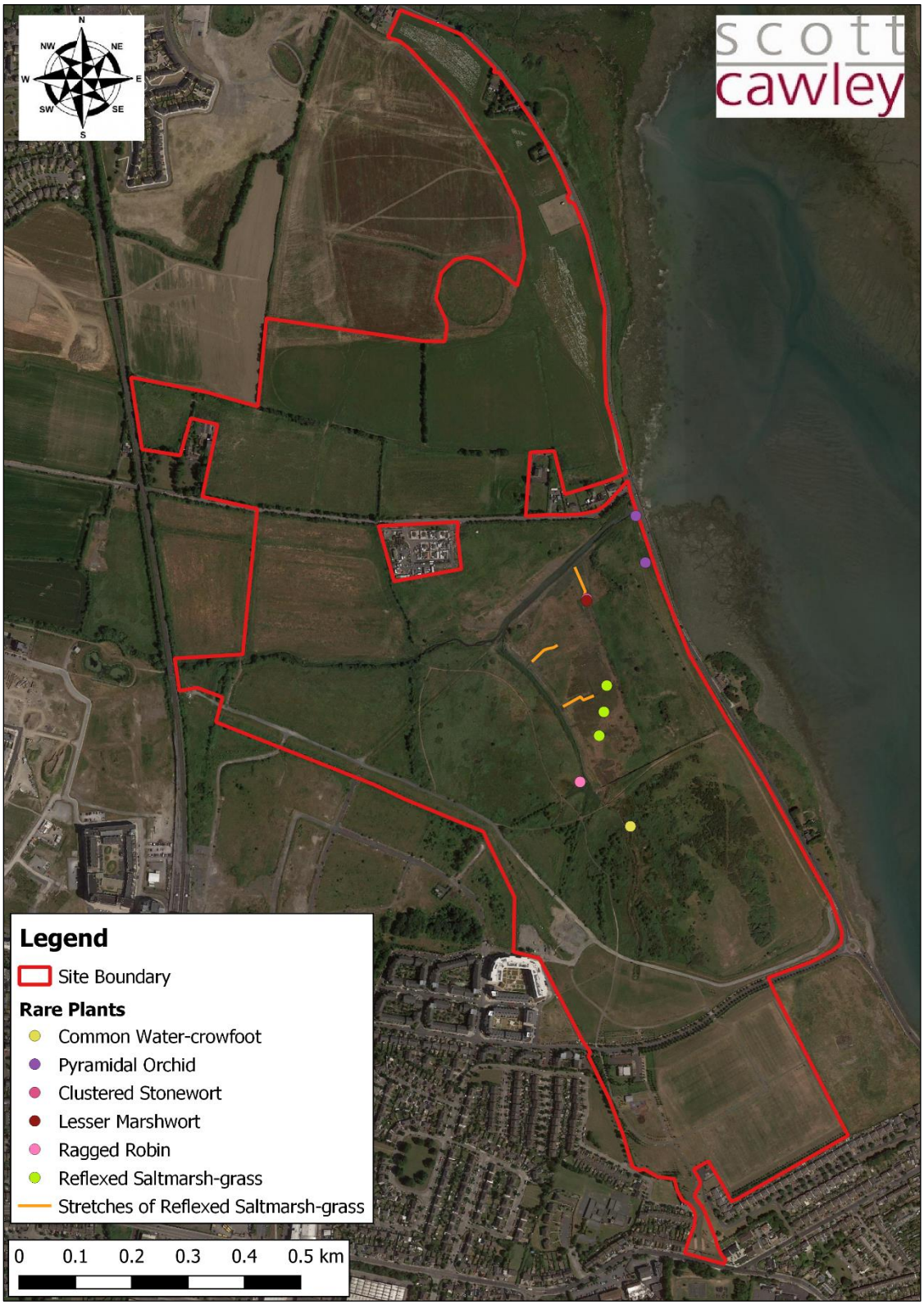
Borrer's Saltmarsh-grass is legally protected in Ireland as it is listed on the Flora (Protection) Order (2015). It was recorded in plentiful amounts along the banks of the River Mayne and associated drains in 1989 and 1991 (Doogue, 1991). Dumping and works to the river have resulted in the loss of these populations and the species has not been found at the site for many years.

Knotted Hedge-parsley is a very rare plant in Co. Dublin, with only 3 known sites for this species reported in Doogue et al. (1998). A few plants were found in 1991 growing on a dry bank near the confluence of the Snugborough River and River Mayne (Doogue et al., 1998).

In relation to rare flora species, three species which are considered rarities in the Fingal area were recorded by Fitzgerald during summer surveys in 2017: Four plants of Ragged-robin *Silene flos-cuculi* were identified growing in wet grassland vegetation to the west of the Snugborough River. One plant of Common Water-crowfoot *Ranunculus aquatilis* was found on wet (brackish), muddy ground by the eastern edge of the Snugborough River in the area of grassland/ scrub to the north of Red Arches road. Finally, three Pyramidal Orchids *Anacamptis pyramidalis* were found in two locations on dumped subsoil (from the late 1980's/ early 1990's) to the south of the Mayne River in the east of the site. In

addition, Denyer Ecology recorded an additional three rare species on site in 2019 – Reflexed Saltmarsh-grass *Puccinellia distans*, Clustered Stonewort *Tolypella glomerata* and Lesser Marshwort *Apium inundatum*. Approximately 100 plants of Reflexed Satmarsh-grass were recorded on site in a number of locations. It was found to be locally frequent in the brackish ditches which occur in the portion of the site contained within the SAC boundary. Clustered Stonewort and Lesser Marshwort were also recorded from a similar environment on site. Clustered Stonewort was previously only known in Dublin from the Royal Canal and Grand Canal. Lesser Marshwort is very rare in Dublin but may be known historically from the site as, according to Doogue et al. (1998), it was previously recorded as being "*abundant in marshes to the west of Portmarnock*" and at "*Baldoyle*" (Denyer Ecology, 2019). The locations of these rare flora species as identified in summer 2017 and summer 2019 by Fitzgerald (2017) and Denyer Ecology (2019) respectively are presented in Figure 6.

Figure 6: Approximate Locations of Rare Plant Species, as recorded in summer 2017 (Source: Fitzgerald, 2017) [10]***.***



[10] Please note that Clustered Stonewort and Lesser Marshwort were also recorded in the same location during 2019 surveys by Denyer Ecology. As such it cannot be accurately represented visually.

Fauna

In terms of non-avian terrestrial fauna both Atkins-McCarthy (2000) and Goodwillie (2002) observed rabbit and fox signs on site. They also mentioned the suitability of the grassland as good habitat for small mammals. A survey by Roughan & O'Donovan (2018) also confirmed that Otter *Lutra lutra* are present inside the Racecourse Park and along the Mayne River.

A bat survey conducted by Keeley (2016) recorded three different bat species: Common Pipistrelle *Pipistrellus pipistrellus,* Soprano Pipistrelle *Pipistrellus pygmaeus* and Leislers's bat *Nyctalus leisleri*. These particular bat species are associated with urban areas and are most tolerant to light pollution (Lewanski and Voigt, 2016). Furthermore, the Dublin Bat Group carried out a bat survey of the lands in August 2018. They recorded two bat species on site- Common Pipistrelle bat and Leisler's bat.

The Mayne River is said to have good riffle/pool bedform arrangement and gravels that would be of suitable grainsize for salmonid spawning. Good salmonid nursery habitat was also noted (Roughan & O'Donovan, 2018). Inland Fisheries Ireland (IFI) conducted a number of electrofishing surveys in 2011 and 2016. During these surveys they recorded European Eel *Anguilla anguilla*, Three-spined Stickleback *Gasterosteus aculeatus* and Flounder *Platichthys flesus* using the river (incomplete IFI report, see Roughan & O'Donovan, 2018).

Scott Cawley Ltd. undertook winter bird surveys for Light-bellied Brent Geese over the 2016-2017 winter bird season, to inform the preparation of a Natura Impact Statement (NIS) for a proposed residential development in Raheny, Dublin 5. These surveys covered the network of inland feeding sites in the Dublin area ranging from sites near Rogerstown Estuary in the north of the County to sites in Cabinteely in the south. Two of the sites surveyed – Baldoyle Red Arches Pitches and Baldoyle Red Arches North – are contained within the proposed park development site, and were surveyed during February and March 2019 to inform this EcIA. As part of the analysis conducted in the aforementioned NIS prepared by Scott Cawley Ltd. in 2017, data from previous winter bird seasons for known inland feeding sites was also assessed. Relevant data for Baldoyle Red Arches Pitches and Baldoyle Red Arches North, as taken from the 2017 NIS, is presented in Table 3. Data for Seagrange Park, which lies to the south of the proposed Baldoyle Racecourse Park site is also provided for context.

Table 3: Peak counts of Light-bellied Brent Geese recorded in Red Arches Pitches, Red Arches North and Seagrange Park. **(Source: *Natura Impact Statement for Proposed Residential Development at St. Paul's College, Sybill Hill, Raheny, Dublin 5* (Scott Cawley Ltd., 2017))**

	Peak ever recorded	2012-2013 (Peak)	2013-2014 (Peak)	2014-2015 (Peak)	2015-2016 (Peak)	2016-2017 (Peak)
Baldoyle Red Arches Pitches	2500 (Jan 2010)	1000 (Dec 2012)	450 (Feb 2014)	800 (Jan 2015)	160 (Mar 2016)	1000 (Feb 2017)
Badloyle Red Arches North	455 (Jan 2017)	300 (Jan 2013)	Not Surveyed	62 (Feb 2015)	225 (Dec 2015)	455 (Jan 2017)
Seagrange Park	2000 (Dec 2011)	750 (Feb 2013)	600 (Jan 2014)	2000 (Mar 2015)	1000 (Feb 2016)	1230 (Dec 2016)

In determining each sites respective significance for Light-bellied Brent geese in this 2017 study, Scott Cawley Ltd. assessed the peak counts recorded at each site against the internationally accepted 1% of total flyaway population criterion, following the methodology outlined in a study by Benson (2009). According to the summary data for the I-WeBS site "Baldoyle Bay 0U403", 400 Light-bellied Brent geese represents 1% of the population, and sites which support numbers such as these are of international importance for this species. The levels of significance, with respect to numbers of Light-bellied Brent geese supported by a site, are as follows:

- 401+ birds = Major importance
- 51-400 birds= High importance
- 1-50 birds = Moderate importance

Based on the data presented in the NIS prepared by Scott Cawley Ltd. 2017, and displayed in Table 3, it is clear that Baldoyle Red Arches Pitches are consistently of major importance for Light-bellied Brent geese as they consistently support numbers greater than 401 birds. Whilst the Baldoyle Red Arches North site was of major importance during the 2016-2017 survey period (455 birds recorded), the significance of this site appears to vary somewhat between years, being regarded as of only high importance during previous seasons: 2012-2013; 2014-2015; and; 2015-2016. Seagrange Park, located to the south of the proposed Baldoyle Racecourse Park site, is similar to Baldoyle Red Arches Pitches site in that it consistently supports more than 401 Light-bellied Brent geese.

Nairn and Fox (2017) conducted a winter bird survey on the proposed development site over the period November 2016 to April 2017. They found that the Maynestown area in the north section of the subject lands contained important winter populations of Skylark *Alauda arvensis*, Tree Sparrow *Passer montanus* and Linnet *Linaria canabina*. They also observed good numbers of Meadow Pipit *Anthus pratensis* and Reed Bunting *Emberiza schoeniclus*. They assessed the Racecourse lands as being relatively unimportant for waterbirds, due to the encroachment of scrub. No geese or other waterbirds were observed during their survey period, despite records of Brent Geese *Branta bernicla* foraging in the area during 2011-2012 (Pierce and Dillon, 2012; Nairn and Fox, 2017).

Between April-June 2018 Pierce (2018) conducted a breeding bird survey of the Racecourse Park grounds. He found the site to be an important breeding site for two red-listed species[11], Lapwing *Vanellus vanellus* and Meadow Pipit, and up to seven amber-listed species[12]; Skylark, Robin *Erithacus rubecula*, Stonechat *Saxicola rubicola*, Mistle Thrush *Turdus viscivorus*, Goldcrest *Regulus regulus*, Linnet and Greenfinch *Chloris chloris*. The following year (2019), Pierce conducted additional breeding bird surveys between April and June. A total of 63 species were recorded on site, including Quail *Cotunix cotunix* which had not been recorded on site in previous years. Grasshopper Warbler *Locustella naevia*, a site rarity, was also recorded. Of the 63 species noted in 2019, 35 were confirmed to be breeding on site, including Buzzard *Buteo buteo* which bred for the first time in the west of the site. Notably, the number of breeding Lapwing dropped from 5 pairs in 2018 to 2 pairs in 2019. The 2019 surveys confirmed that the site remained an important breeding site for the Lapwing and

[11] "Red listed species are those of highest conservation priority, being globally threatened, declining rapidly in abundance or range, or having undergone historic declines from which they have not recently recovered" (Colhoun & Cummins, 2013).

[12] "Amber-listed species have an unfavourable status in Europe, have moderately declined in abundance or range, a very small population size, a localised distribution, or occur in internationally important numbers" (Colhoun & Cummins, 2013).

Meadow Pipit and the same seven amber-listed species as in 2018 (Skylark, Robin, Stonechat, Mistle Thrush, Goldcrest, Linnet and Greenfinch[13]). The continued successful breeding of Lapwing on site in 2019 indicates that the grazing regime introduced since 2014 has allowed this bird to breed on the site and made the habitats present more attractive for breeding Lapwing. Meadow Pipit has also benefitted, though to a lesser extent (Pierce, 2019).

5.3.2. *Records of Rare, Protected and Red-Listed Flora & Fauna Species*

Distribution records for rare / protected species within 2km of the proposed development site were obtained from the online National Biodiversity Data Centre (NBDC), on the 15th July 2019 and updated on the 31st January and 16th October 2020[14]. Records for rare and protected species, held by NPWS, were obtained from the NPWS online mapviewer for the hectad within which the proposed development site is located (O24) on the 31st January 2020[15]. The results are shown below in Table 3.

Table 4: Records of Protected, Rare and Other Notable Flora and Fauna

Records of Protected, Rare and other Notable Flora and Fauna Species[16] within 10km or 2km of the Site				
Common Name	**Scientific Name**	**Protection[17]**	**Red-Listing Status[18]**	**Nearest Location**
Flora				
Round Prickly-headed Poppy	*Papaver hybridum*	FPO	Regionally Extinct	Malahide (O2146) (1985)
Meadow Saxifrage	*Saxifraga granulata*	FPO	Regionally Extinct	Baldoyle Race Course (O2040) (1902)
Hairy Violet	*Viola hirta*	FPO	Vulnerable	Baldoyle (O2040) (1895)
Tufted Saltmarsh- Grass	*Puccinellia fasciculata*	FPO	Near Threatened	Baldoyle (O237415) (1993)
Annual Knawel	*Scleranthus annuus*	FPO	Vulnerable	Baldoyle (O24) (1846)
Lesser Centaury	*Centaurium pulchellum*	FPO	Near Threatened	Portmarnock Point (O2441) (1991)
Oyster Plant	*Mertensia maritima*	FPO	Vulnerable	O24 (1831)
Meadow Barley	*Hordeum secalinum*	FPO	Vulnerable	Portmarnock (O2341) (1991)
Basil Thyme	*Acinos arvensis*	FPO	Near Threatened	Portmarnock (O2040) (1903)

[13] These seven amber-listed species represent species typical of lowland farmland and wet meadows. These species are of conservation concern because they have undergone substantial declines in their breeding number and a contraction of their breeding ranges at a national scale.

[14] National Biodiversity Data Centre www.biodiversityireland.ie [Accessed 15th July 2019, 31st January 2020 and 16th October 2020]

[15] NPWS online mapviewer http://webgis.npws.ie/npwsviewer/ [Accessed 15th July 2019 and 31st January 2020. Webpage unavailable on 16th October 2020]

[16] Data from a combination of the following sources; NPWS Research Branch Records, www.npws.ie, Bat Conservation Ireland (BCI) and NBDC online maps http://maps.biodiversityireland.ie **Data is quoted as obtained from these sources.**

[17] HDII/IV/V = Habitats Directive Annexes II/IV/V; FPO = Flora Protection Order; WA = Wildlife Acts; BD I = Birds Directive Annex I.

[18] Mammal Red-list from Marnell *et al*., 2009. Birds from *Birds of Conservation Concern in Ireland 2014–2019* (Colhoun & Cummins, 2013); Vascular Flora from the Irish Red List No. 10: Vascular Plants (Wyse Jackson *et al.,* 2016)); Fish, Amphibians and Reptiles (King *et al*., 2011); Bryophytes Red List (Lockhart *et. al.* 2012); Cetaceans conservation status (Nelson *et al*., 2019).

Records of Protected, Rare and other Notable Flora and Fauna Species[16] within 10km or 2km of the Site				
Common Name	**Scientific Name**	**Protection[17]**	**Red-Listing Status[18]**	**Nearest Location**
Red Hemp Nettle	*Galeopsis angustifolia*	FPO	Vulnerable	Donabate (O2040) (1902)
Fauna				
Common Frog	*Rana temporaria*	HDV, WA	Least Concern	Within 2km of the proposed development site (2018)
Smooth Newt	*Lissotriton vulgaris*	WA	Least Concern	Within 2km of the proposed development site (2012)
Otter	*Lutra lutra*	HD II, IV, WA	Least Concern	Within 2km of the proposed development site (2017)
Soprano Pipistrelle bat	*Pipistrellus pygmaeus*	HD IV, WA	Least Concern	Within 2km of the proposed development site (2012)
Leisler's Bat	*Nyctalus leisleri*	HD IV, WA	Least Concern	Within 2km of the proposed development site (2007)
Common Pipistrelle bat	*Pipistrellus pipistrellus*	HD IV, WA	Least Concern	Within 2km of the proposed development site (2007)
Irish Hare	*Lepus timidus subsp. Hibernicus*	HD V, WA	Least Concern	Within 2km of the proposed development site (2018)
Irish Stoat	*Mustela erminea* subsp. *hibernicus*	WA	Least Concern	Within 2km of the proposed development site (2015)
Western Hedgehog	*Erinaceus europaeus*	WA	Least Concern	Within 2km of the proposed development site (2016)
Pygmy Shrew	*Sorex minutus*	WA	Least Concern	Within 2km of the proposed development site (2013)
Bottle-nosed Dolphin	*Tursiops truncatus*	HD II, IV, WA	Not Evaluated	Within 2km of the proposed development site (2011)
Common Dolphin	*Delphinus delphis*	HD IV, WA	Not Evaluated	Within 2km of the proposed development site (2008)
Black-headed Gull	*Larus ridibundus*	WA	Red listed under BoCCI	Within 2km of the proposed development site (2011)
Black-tailed Godwit	*Limosa limosa*	WA	Amber listed under BoCCI	Within 2km of the proposed development site (2011)
Barn Owl	*Tyto alba*	WA	Red listed under BoCCI	Within 2km of the proposed development site (2011)
Barn Swallow	*Hirundo rustica*	WA	Amber listed under BoCCI	Within 2km of the proposed development site (2011)
Brent Goose	*Branta bernicla*	WA	Amber listed under BoCCI	Within 2km of the proposed development site (2011)
Common Kestrel	*Falco tinnunculus*	WA	Amber listed under BoCCI	Within 2km of the proposed development site (2011)
Common Linnet	*Carduelis cannabina*	WA	Amber listed under BoCCI	Within 2km of the proposed development site (2011)

Records of Protected, Rare and other Notable Flora and Fauna Species[16] within 10km or 2km of the Site				
Common Name	**Scientific Name**	**Protection[17]**	**Red-Listing Status[18]**	**Nearest Location**
Common Pheasant	*Phasianus colchicus*	BD II, III, WA	Green listed under BoCCI	Within 2km of the proposed development site (2011)
Common Redshank	*Tringa totanus*	WA	Red listed under BoCCI	Within 2km of the proposed development site (2011)
Common Wood Pigeon	*Columba palumbus*	BD II, III, WA	Green listed under BoCCI	Within 2km of the proposed development site (2011)
Common Scoter	*Melanitta nigra*	BD II, III, WA	Red listed under BoCCI	Within 2km of the proposed development site (2017)
Common Shelduck	*Tadorna tadorna*	WA	Amber listed under BoCCI	Within 2km of the proposed development site (2011)
Common Snipe	*Gallinago gallinago*	BD II, III, WA	Amber listed under BoCCI	Within 2km of the proposed development site (2011)
Common Swift	*Apus apus*	WA	Amber listed under BoCCI	Within 2km of the proposed development site (1991)
Common Starling	*Sturnus vulgaris*	WA	Amber listed under BoCCI	Within 2km of the proposed development site (2011)
Eurasian Curlew	*Numenius arquata*	BD II, WA	Red listed under BoCCI	Within 2km of the proposed development site (2011)
Eurasian Oystercatcher	*Haematopus ostralegus*	WA	Amber listed under BoCCI	Within 2km of the proposed development site (2011)
Eurasian Teal	*Anas crecca*	BD II, III, WA	Amber listed under BoCCI	Within 2km of the proposed development site (2011)
Eurasian Tree Sparrow	*Passer montanus*	WA	Amber listed under BoCCI	Within 2km of the proposed development site (1991)
Eurasian Woodcock	*Scolopax rusticola*	BD II, III, WA	Amber listed under BoCCI	Within 2km of the proposed development site (2011)
Eurasian Wigeon	*Anas penelope*	BD II, III, WA	Amber listed under BoCCI	Within 2km of the proposed development site (2011)
Gadwall	*Anas strepera*	BD II, WA	Amber listed under BoCCI	Within 2km of the proposed development site (2011)
Great Cormorant	*Phalacrocorax carbo*	WA	Amber listed under BoCCI	Within 2km of the proposed development site (2016)
Great Northern Diver	*Gavia immer*	WA	Amber listed under BoCCI	Within 2km of the proposed development site (2011)
Herring Gull	*Larus argentatus*	WA	Red listed under BoCCI	Within 2km of the proposed development site (2011)
House Martin	*Delichon urbicum*	WA	Amber listed under BoCCI	Within 2km of the proposed development site (2016)
House Sparrow	*Passer domesticus*	WA	Amber listed under BoCCI	Within 2km of the proposed development site (2011)
Kentish Plover	*Charadrius alexandrinus*	BD I, WA	N/A	Within 2km of the proposed development site (1848)

Records of Protected, Rare and other Notable Flora and Fauna Species[16] within 10km or 2km of the Site				
Common Name	**Scientific Name**	**Protection[17]**	**Red-Listing Status[18]**	**Nearest Location**
Little Egret	*Egretta garzetta*	BD I, WA	Green listed under BoCCI	Within 2km of the proposed development site (2017)
Little Grebe	*Tachybaptus ruficollis*	WA	Amber listed under BoCCI	Within 2km of the proposed development site (2017)
Mallard	*Anas platyrhynchos*	BD II, III, WA	Green listed under BoCCI	Within 2km of the proposed development site (2012)
Meadow Pipit	*Anthus pratensis*	WA	Red listed under BoCCI	Within 2km of the proposed development site (1991)
Mew Gull	*Larus canus*	WA	Amber listed under BoCCI	Within 2km of the proposed development site (2011)
Mediterranean Gull	*Larus melanocephalus*	BD I, WA	Amber listed under BoCCI	Within 2km of the proposed development site (2011)
Mute Swan	*Cygnus olor*	WA	Amber listed under BoCCI	Within 2km of the proposed development site (2017)
Northern Lapwing	*Vanellus vanellus*	BD II, WA	Red listed under BoCCI	Within 2km of the proposed development site (2011)
Rock Pigeon	*Columba livia*	BD II, WA	Green listed under BoCCI	Within 2km of the proposed development site (2011)
Short-eared Owl	*Asio flammeus*	BD I, WA	Amber listed under BoCCI	Within 2km of the proposed development site (2003)
Skylark	*Alauda arvensis*	WA	Amber listed under BoCCI	Within 2km of the proposed development site (2011)
Spotted Flycatcher	*Muscicapa striata*	WA	Amber listed under BoCCI	Within 2km of the proposed development site (1991)
Stock Pigeon	*Columba oenas*	WA	Amber listed under BoCCI	Within 2km of the proposed development site (1991)
Yellowhammer	*Emberiza citrinella*	WA	Red listed under BoCCI	Within 2km of the proposed development site (2011)
Invasive Species				
Giant Hogweed	*Heracleum mantegazzianum*	N/A	Third Schedule, restrictions under Regulation 49 and 50. High Impact Invasive Species	Within 2km of the proposed development site (2017)
Japanese Knotweed	*Reynoutria japonica*	N/A	Third Schedule, restrictions under Regulation 49 and 50. High Impact Invasive Species	Within 2km of the proposed development site (2017)

Records of Protected, Rare and other Notable Flora and Fauna Species[16] within 10km or 2km of the Site				
Common Name	**Scientific Name**	**Protection[17]**	**Red-Listing Status[18]**	**Nearest Location**
Sycamore	*Acer pseudoplatanus*	N/A	Medium Impact Invasive Species	Within 2km of the proposed development site (2017)
European Rabbit	*Oryctolagus cuniculus*	N/A	Medium Impact Invasive Species	Within 2km of the proposed development site (2018)
Butterfly Bush	*Buddleja davidii*	N/A	Medium Impact Invasive Species	Within 2km of the proposed development site (2017)
Harlequin Ladybird	*Harmonia axyridis*	N/A	Third Schedule, restrictions under Regulation 49 and 50. High Impact Invasive Species	Within 2km of the proposed development site (2017)
Common Garden Snail	*Cornus aspersum*	N/A	Medium Impact Invasive Species	Within 2km of the proposed development site (2002)

5.3.3. *Likelihood of Occurrence of Protected Species Within the Proposed Development Site*

Flora

Several of the records for FPO species listed in Table 3 are historic in nature. Many of these species have not been recorded within the vicinity of the site for several decades and it is therefore considered unlikely that any of these species still occur on site. It is considered unlikely that Meadow Barley, Brackish Water-crowfoot, Borrer's Saltmarsh-grass or Knotted Hedge-parsley would be recorded in the subject lands, as most of these species have not been recorded on site since 1991. Rare species such as Ragged-robin, Common Water-crowfoot and Pyramidal Orchid are likely to be present on site, given the fact that they have been recorded in recent years (Fitzgerald, 2017).Rare species recorded by Denyer Ecology in summer 2019 are likely to be present in suitable habitat on site (e.g. brackish diches and wetland habitats (Denyer Ecology, 2019).

Fauna

It is considered highly likely that otter would occur within the proposed development site. This is due to the presence of watercourses flowing through the site, which would be regarded as suitable habitat for this species. Furthermore, Otter were recorded along the River Mayne in 2018. It is possible that Badger *Meles meles*, Pygmy Shrew *Sorex minutus*, Irish Hare *Lepus timidus* subsp. *hibernicus*, Irish Stoat *Mustela erminea* subsp. *hibernica* and Hedgehog *Erinaceus europaeus*, all of which are legally protected in Ireland under the Wildlife Acts, would frequent the site due to the presence of areas of grassland and hedgerows which may be potentially suitable for foraging or commuting purposes. It is highly likely that foxes, which are not legally protected in Ireland, use the proposed development site. Bats are likely to use the site for foraging and/or commuting purposes given the absence of artificial lighting and the complex of habitats, including watercourses and wetland habitats, which are likely to be abound with insects on which bats prey.

Given the findings of the literature review, the site is likely to be of significant importance for a range of breeding bird species, including some species of conservation concern. Furthermore, considering the findings of the literature review and its proximity to Baldoyle Bay, an important resource for waterbirds and waders, it is deemed likely that such birds, including protected bird species, use the site.

5.4. FIELD SURVEY RESULTS

5.4.1. *Habitats and Flora*

Protected and Rare Flora Species

No records of plant species protected through their inclusion within the *Flora (Protection) Order, 2015* were recorded during the field surveys. Furthermore, previous botanical studies, conducted in the last three years (Fitzgerald, 2017, Denyer Ecology, 2019), did not record any legally protected plant species within the subject lands.

Invasive Species

Three invasive species, all of which are listed on the Third Schedule of the *Birds and Natural Habitats Regulations (2011)*, were recorded within the survey area: Giant Hogweed *Heracleum mantegazzianum*, Japanese Knotweed *Reynoutria japonica* and Three-cornered Leek *Allium triquetrum*. A single Giant Hogweed plant was recorded along the southern boundary of an area of amenity grassland to the north of Red Arches road. Stands of Japanese Knotweed were noted within the Moyne Park halting site and along the Moyne Road. Three-cornered Leek was recorded at the entrance to a field just south of the Moyne Road and this species was also present at the entrance to the allotments in Baldoyle Racecourse Park. The locations of all invasive species identified within the subject lands are displayed on Figure 7. Fitzgerald also recorded one Giant Hogweed plant in the area of grassland/ scrub to the west of the Snugborough Stream during 2017 surveys (Fitzgerald, 2017). This area was not accessible during 2019 surveys due to the presence of livestock. Therefore, it cannot be confirmed whether this plant remains here.

Plate 1: Japanese Knotweed recorded along the Moyne Road (April 2019).

Plate 2: Three-cornered leek recorded in fields to the south of the Moyne Road (April 2019)

Plate 3: Giant Hogweed recorded in amenity grassland to the north of Red Arches road (March 2019).

Figure 7: Locations and Distribution of Third Schedule invasive species, as recorded in 2019.

Habitats

The following habitat types, and mosaics of same, of the Heritage Council classification system (Fossitt, 2000) were identified within the subject lands and surroundings and are mapped in Figure 8:

- Buildings & Artificial Surfaces (BL3)
- Stonewalls & Other Stonework (BL1)
- Spoil & Bare Ground (ED2)
- Recolonising Bare Ground (ED3)
- Refuse & Other Waste (ED5)
- Horticultural Land (BC2)
- Depositing/ Lowland Rivers (FW2)
- Drainage Ditches (FW4)
- Other Artificial Lakes & Ponds (FL8)
- Reed & Large Sedge Swamps (FS1)
- Improved Agricultural Grassland (GA1)
- Amenity grassland (GA2)
- Dry Meadows & Grassy Verges (GS2)
- Wet Grassland (GS4)
- Hedgerows (WL1)
- Treelines (WL2)
- Scrub (WS1)
- Ornamental/ Non-native Shrubs (WS3)
- Scattered Trees & Parkland (WD5)
- Upper Saltmarsh (CM2)

Buildings & Artificial Surfaces (BL3)

Tarmacadam pathways and roadways were classified under this habitat type, as was the existing derelict Baldoyle Community Centre and associated play areas which are composed of artificial surfaces. These areas are largely devoid of vegetation. Along the verges of roads this habitat occurs in a mosaic with amenity grassland (GA2). Given the absence of vegetation in this habitat, it is regarded to be of negligible ecological value.

Stonewalls & Other Stonework (BL1)

A stonewall runs along a grassy laneway which separates the two fields in the central eastern part of the site. Vegetation present on the wall included ferns such as Western Polypody *Polypodium interjectum* and Wall Rue *Asplenium ruta muraria*. Ivy *Hedera helix* was also present and grasses such as Red Fescue *Festuca rubra* and Sheep's Fescue *Festuca ovina* occurred occasionally. The wall was largely unvegetated and therefore is regarded to be of local ecological importance (lower value).

Plate4: Stonewall present on site (April 2019).

Spoil & Bare Ground (ED2)

An area of disturbed ground to the north of the amenity grassland area was classified under this habitat type. This area was composed of a gravel substrate and appears to have been associated with previous construction projects in the area. Vegetation cover was less than 50% and was largely composed of opportunistic plant species such as Groundsel *Senecio vulgaris*, Greater Plantain *Plantago major*, White Clover *Trifolium repens*, Spurge species *Euphorbia* sp., Thistle species *Cirsium* sp., Butterfly Bush *Buddleja davidii* and Prickly Lettuce *Lactuca serriola*. Pathways which were not composed of hard standing were also included under this habitat type. Given the disturbed nature of this habitat type, and the limited flora present, this habitat is deemed to be of local ecological importance (lower value).

Plate 5: Spoil and bare ground habitat, with amenity grassland in the background (March 2019).

Recolonising Bare Ground (ED3)

A single area of recolonising bare ground was identified to the north of the area of spoil and bare ground in the west of the site. This area is similar in terms of species composition to the area of spoil and bare ground (ED2) to the south, but vegetation cover is greater than 50%. Additional species recorded here include Yorkshire Fog *Holcus lanatus*, Tormentil *Potentilla erecta* and Bush Vetch *Vicia sepium*. This habitat grades into dry meadows and grassy verges (GS2) further north. Given the disturbed nature of this habitat type, and the limited diversity of vegetation present, this habitat is deemed to be of local ecological importance (lower value).

Refuse & Other Waste (ED5)

A mound of rubble and waste was identified to the south of the River Mayne, shortly before its discharge into Baldoyle Bay. This waste appeared to comprise rubble from construction sites and domestic waste. The mound was rather steep, and vegetation was limited. This habitat type is of negligible ecological importance, given its nature.

Horticultural Land (BC2)

The Baldoyle Racecourse Community Garden allotments were classified as horticultural land as per the guidance in Fossitt (2000). Locals use this area for growing fruits and vegetables in raised beds and greenhouses. A young hawthorn hedgerow (WL1) surrounds the allotments. This habitat is of local ecological importance (lower value) due to its cultivated nature.

Depositing/ Lowland Rivers (FW2)

Three of the watercourses which flow through the subject lands (River Mayne, Snugborough Stream and Maynetown Stream) were classified as depositing/ lowland rivers. Due to their proximity with Baldoyle Bay the gradient of the watercourses was low and flow was slow. In terms of vegetation the

banks of the Maynetown River were dominated by Common Reed *Phragmites australis*. The banks of the River Mayne are composed of dense hedgerows and areas of muddy banks which have been colonised by Winter Heliotrope *Petasites fragrans*. Rivers on site, such as the River Mayne, are deemed to be of County importance given their significance in Fingal County and the connectivity they provide to the wider environment.

Plate 6: Confluence of the River Mayne and Snugborough River on site (March 2019).

Drainage Ditches (FW4)

Drainage ditches were present in a few locations within the subject lands. These features were largely associated with hedgerows or scrub and often flowed into the Snugborough River. The Snugborough Stream which flows through the subject lands was classified as a drainage ditch due to its much-reduced size and association with a dense hedgerow on site. Drainage ditches on site are of local ecological importance (higher value) because of the connectivity they provide to the wider surface water network and the aquatic flora and fauna they support.

Other Artificial Lakes & Ponds (FL8)

An attenuation pond which is present in the north east of the site was classified under this habitat type. This attenuation pond appears to have been constructed relatively recently and no vegetation was present within the waterbody. Given the lack of vegetation present, this habitat is of local ecological importance (lower value).

Plate 7: Attenuation pond in the north of the site (April 2019).

Reed & Large Sedge Swamps (FS1)

Areas of reed beds, associated with freshwater watercourses which flow through the subject lands, were classified under this habitat type. These areas were dominated by Common Reed and were quite dense. A wetland area to the north of the Moyne Road was also classified under this habitat type. Common Reed was again present here in association with Bulrush *Typha latifolia* and Willowherb species *Epilobium* sp. Soft Rush *Juncus effusus* was also present here along with a few Willow trees *Salix* sp. There was no standing water here although the ground was rather wet underfoot. This wetland habitat is of local ecological importance (higher value) due to the scarcity of wetland habitats in Fingal County.

Plate 8: Reed beds along the Snugborough River (March 2019)

Improved Agricultural Grassland (GA1)

Several areas of agricultural grassland are present within the site boundary, particularly in the north of the site. These areas are dominated by Perennial Ryegrass *Lolium perenne* and are often grazed by livestock such as sheep and horses. Other species recorded in this habitat type include Dandelion *Taraxacum vulgare*, Cock's-foot *Dactylis glomerata,* Ribwort Plantain *Plantago lanceolata* and Red Clover *Trifolium pratense*. The field which lies to the north of the River Mayne in the east of the site was classified under this habitat type. Horses graze here and poaching is evident along the banks of the river. Small areas of bramble scrub (WS1) also exist here. Given the low species diversity in areas of this habitat type, it is deemed to be of local ecological importance (lower value).

Amenity grassland (GA2)

Areas of amenity grassland are present in the southern portion of the site. These areas comprise playing pitches and other areas used for amenity purposes which are regularly mown and maintained. The sward in these areas is dominated by Perennial Ryegrass, with White Clover *Trifolium repens* and Creeping Buttercup *Ranunculus repens* occurring frequently. Other species recorded include Daisy *Bellis perennis*, Dandelion, Greater Plantain and Yorkshire Fog. Given the low species diversity in areas of this habitat type, it is deemed to be of local ecological importance (lower value).

Plate 9: Amenity grassland to the north of Red Arches Road (March 2019).

Dry Meadows & Grassy Verges (GS2)

Several areas of dry meadows and grassy verges exist within the boundary of the site. This habitat also occurs in mosaics with other habitats such as wet grassland (GS4) and scrub (WS1). Areas of dry meadows and grassy verges comprise of grasslands which are not regularly mown or maintained, which means that the sward is often quite high and composed of tall, tussocky grass species. There is a higher proportion of herbaceous plants in the sward than agricultural grassland or amenity grassland. Grass species commonly recorded in these areas include Cock's-foot, False Oat-grass *Arrhenatherum elatius,* Yorkshire Fog and Red Fescue *Festuca rubra*. Perennial Ryegrass was also recorded occasionally. In terms of the herbaceous component, Common Hogweed *Heracleum*

sphondylium was frequently encountered, along with Ribwort *Plantain Plantago lanceolat*a, Cow Parsley *Anthriscus sylvestris*, White Clover, Dandelion, Thistle species *Cirsium* spp. and Creeping Buttercup. Broad-leaved Dock *Rumex obtusifolius* and Ragwort *Senecio jacobaea* were recorded occasionally. Meadow Vetchling *Lathyrus pratensis*, Creeping Cinquefoil *Potentilla reptans,* Willowherb species *Epilobium spp.* and Meadow Buttercup *Ranunculus acris* occurred in places.

One area of GS2 in the north of the site appeared to be more diverse than other areas. Additional herbaceous species recorded here included Yarrow *Achillea millefolium*, Red Clover, Red Campion *Silene dioica*, Shepherd's Purse *Capsella bursa-pastoris* and Speedwell species *Veronica* spp. It may be the case that these species are derived from a "wildflower seed mix" which is known to have been sown in close proximity to this area in recent years. Due to the species richness of these grassland areas they are considered to be of local ecological importance (higher value).

Wet Grassland (GS4)

Wet grassland occurs in a few places within the site, mostly in close proximity to the Snugborough River. Rushes such as Soft Rush *Juncus effusus* and Hard Rush *Juncus inflexus* were typical of such areas. Other typical species included Meadow Buttercup, Creeping buttercup, Nettle *Urtica dioica*, Cuckooflower *Cardamine pratensis*, Yorkshire Fog, Silverweed *Potentilla anserina* and Hairy Segde *Carex hirta.* This habitat sometimes occurred as a mosaic with scrub (WS1). Wet grassland ahas been identified as a "target habitat" and "bufferzone" in the Fingal Biodiversity Action Plan 2010-2015, and as such is regarded as being of local ecological importance (higher value).

Hedgerows (WL1)

Numerous hedgerows are present on site and often form field boundaries or line the banks of watercourses. Scrubby species such as Bramble *Rubus fruticosus* and Gorse *Ulex europaeus* were often present in hedgerows on site. Tree species present in hedgerows included Ash *Fraxinus excelsior*, Elder *Sambucus nigra*, Hawthorn *Crataegus monogyna*, Sycamore *Acer pseudoplatanus* and Blackthorn *Prunus spinosa*. Field layer species were similar to those recorded in GS2 habitat- False Oat-grass, Cow Parsley, Common Hogweed, Broad-leaved Dock, Cleavers *Galium aparine*, Nettle, Willowherbs, Thistles etc. To the south of the site, ornamental hedgerows, composed of non-natives, surround the playing pitches at Red Arches. Hedgerows in Fingal County are afforded protection through policies contained in the *Fingal Development Plan 2017-2023* and are therefore regarded as being of local ecological importance (higher value).

Treelines (WL2)

Treelines recorded on site were mainly composed of young, planted trees which are regularly spaced, many of which were ornamental in nature. Most of these treelines were associated with the amenity grassland and other recreational areas to the south of the site. Planted species included young Beech *Fagus sylvatica,* Sycamore and Scot's Pine *Pinus sylvestris*, as well as ornamentals. Given the young age of the treelines on site they are deemed to be of local ecological importance (lower value).

Scrub (WS1)

Areas of scrub were common on site and this habitat also occurred as a mosaic with dry meadows and grassy verges (GS2). Scrub was largely composed of Bramble and Gorse and was very dense in places. Hawthorn and Elder were additional components of scrub in some areas. Bramble scrub was often associated with hedgerows on site. Due to the low species diversity of the scrub on site this habitat is of local ecological importance (lower value).

Plate 10: Dry meadows and grassy verges with gorse scrub in the background (April 2019).

Ornamental/ Non-native Shrubs (WS3)

The landscaped area around the existing Baldoyle Community Centre was categorised as ornamental/ non-native shrubs. This area was composed of large ornamental species, typical of suburban landscaping e.g. Dogwood *Cornus* sp., Cotoneaster *Cotoneaster* sp. species and New Zealand Flax *Phormium* sp. Owing to the non-native composition and modified nature of this habitat its is of local ecological importance (lower value).

Scattered Trees & Parkland (WD5)

Areas of scattered trees and parkland were present in the south of the site close to the recreational areas associated with the Community Centre. Here planted trees are present on typical amenity grassland habitat. Trees are relatively young and are planted in lines or groups. Planted species included young Beech *Fagus sylvatica* Sycamore and Scot's Pine *Pinus sylvestris*, as well as ornamentals. Due to the low species diversity of this habitat it is of local ecological importance (lower value).

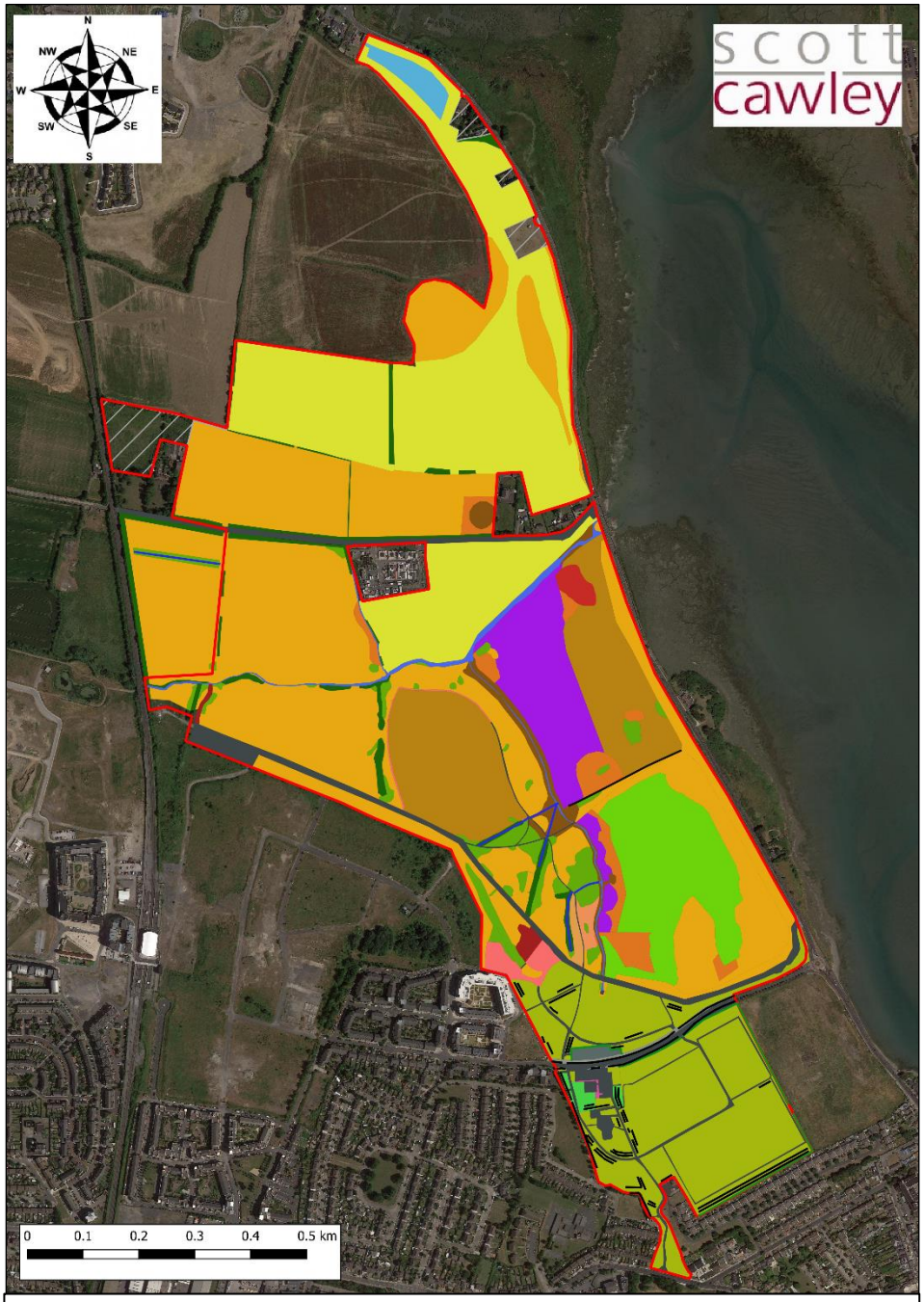
Upper Saltmarsh (CM2)

Upper saltmarsh is present in the east of the site and is associated with the Snugborough River and River Mayne, where brackish influence from Baldoyle Estuary occurs. Vegetation is dominated by rushes and grasses such as Saltmarsh Rush *Juncus gerardii,* Red Fescue *Festuca rubra* and Creeping

Bent *Agrostis stolonifera*. Other typical saltmarsh species frequently recorded include Sea Arrowgrass *Triglochin maritima*, Common Scurvygrass *Cochlearia officinalis* and Sea Plantain *Plantago maritima.* Sea Club-rush *Bolboschoenus maritimus* was found occasionally. Tidal creeks are present in these areas and are a distinctive feature of this habitat type. Vegetation associated with these creeks is typical of saltmarsh habitats e.g. creeks were lined by rushes, Sea-Club-rush and Sea Arrowgrass. The vegetation varies greatly in areas on site which were classified as upper saltmarsh and some parts more closely resemble saltmarsh habitat than others, i.e. species which are typically found in saltmarsh habitats are more abundant than freshwater plants. Pockets which are dominated by rushes are present in places. Upper saltmarsh present on site is regarded as being of County importance, given its identification in the *Fingal Biodiversity Action Plan 2010-2015* as being amongst the most important nature conservation areas in Fingal.

Plate 11: Upper saltmarsh habitat (April 2019).

Figure 8: Habitats Recorded During Field Surveys Undertaken in 2019.



5.4.2. *Fauna*

Terrestrial Mammals (excluding bats)

No signs of protected mammal species were recorded by Scott Cawley Ltd. in 2019. However, previous surveys carried out by Roughan & O'Donovan in 2018 revealed that Otter are present along the River Mayne. Several fresh otter spraints were noted on the rock close to the flapvalves and on the grass close to the wall with the Coast Road. Spraints were also recorded along the River Mayne within the park. Otter prints were also seen in the mud by the outfall. Therefore, otter are clearly present on site and their distribution is closely linked with the watercourses on site and the connection these have with Baldoyle Bay. Given the range of habitats present and the confirmed presence of Otter along the River Mayne, the subject lands are deemed to be of local importance (higher value) for Otter.

Whilst no signs of Badger activity were recorded during the field surveys undertaken, it is possible that Badger could frequent the site due to the presence of areas of grassland which may be potentially suitable for foraging purposes. Given the presence of suitable habitat on site for Badger, the subject lands are deemed to be of local importance (higher value) for Badger.

Based on the results of the desktop study, Hare and Hedgehog are known to occur within the vicinity of the proposed development site. Although no signs of Hare or Hedgehog activity were recorded on site, given the presence of suitable habitat (e.g. areas of grassland), their presence cannot be excluded. The subject lands are deemed to be of local importance (higher value) for Hare and Hedgehog, due to their known presence in the wider environment and the presence of suitable habitat within the subject lands.

Pygmy Shrew and Irish Stoat are also known to occur in the vicinity of the proposed development site and given the presence of suitable habitat (e.g. areas of grassland and hedgerows) which could be used for foraging and commuting purposes, it is possible that these species could frequent the site. Therefore, the subject lands are deemed to be of local importance (higher value) for Pygmy Shrew and Irish Stoat.

Other mammals such as Rabbit and Fox are likely to be present in the park and indeed Rabbit were often seen over the course of the 2019 survey period. Rabbit and Fox are not legally protected in Ireland.

Breeding birds

Surveys carried out by Pierce in 2019 recorded a total of 63 species on site, 35 of which were confirmed to be breeding. Species confirmed to be breeding within the site include Mallard *Anas platyrhynchos*, Buzzard, Moorhen *Gallinula chloropus*, Lapwing *Vanellus Vanellus*, Pheasant *Phasianus colchicus*, Wood Pigeon *Columba palumbus*, Collared Dove *Streptopelia decaocto*, Chiffchaff *Phylloscopus collybiitta*, Goldcrest *Regulus regulus*, Great Tit *Parus major*, Coal Tit *Parus ater*, Blue Tit *Parus caeruleus*, Long-tailed Tit *Aegithalos caudatus*, Magpie *Pica pica*, Jackdaw *Corvus monedula*, Hooded Crow *Corvus corone cornix*, Starling *Sturnus vulgaris*, Chaffinch *Fringilla coelebs*, Linnet *Carduelis cannabina*, Greenfinch *Carduelis chloris*, Goldfinch *Carduelis carduelis*, Bullfinch *Pyrrhula pyrrhula*, Reed Bunting *Emberiza schoeniclus*, Skylark *Alauda arvensis*, Meadow Pipit *Anthus pratensis*, Wren *Troglodytes troglodytes*, Robin *Erithacus rubecula*, Stonechat *Saxicola torquata*, Song Thrush *Turdus philomelos*, Mistle Thrush *Turdus viscivorus*, Dunnock *Prunella modularis*, Blackbird *Turdus merula*, Blackcap *Sylvia atricapilla*, Whitethroat *Sylvia communis*, Sedge Warbler *Acrocephalus schoenobaenus*

and Willow Warbler *Phylloscopus trochilus*. Lapwing and Meadow Pipit are currently regarded as of high conservation concern and are included on the red-list in Ireland. Skylark, Linnet, Goldcrest, Starling, Greenfinch, Mistle Thrush, Robin and Stonechat are all on the amber-list which means that they are of moderate conservation concern. Lapwing are known to breed in the portion of the site which lies within the boundary of the SAC to the south of the River Mayne. The breeding range of Meadow Pipit is widespread through the site, mostly concentrated in the areas of dry meadows and grassy verges. Skylark bred in similar areas to Meadow Pipit, as did Linnet. The greatest concentration of breeding Linnet in 2018 was in the lands to the east of the Maynetown Stream, north of Red Arches Road, which is an area dominated by gorse scrub and dry grassland. Three pairs of Stonechat were recorded breeding in 2019 and their breeding range has increased to include areas to the east of the Snugborough River, as well as grassland areas to the west.

Ad hoc observations of breeding birds recorded during Scott Cawley field surveys confirmed the presence of a number of the above-mentioned bird species on site. In addition, Shelduck *Tadorna tadorna* were often observed in the River Mayne, along with Mallards and gull species. Mallard were also noted in the Snugborough River and Snugborough Stream. Skylark were recorded in the grassland area which lies within the SAC boundary, grassland to the west of the River Snugborough, fields to the south of the Moyne Road and improved agricultural grasslands to the west of Baldoyle Bay. Snipe *Gallinago Gallinago* were often flushed while walking through the site. Snipe were recorded in areas of upper saltmarsh and grasslands to the west of the River Snugborough. Buzzard *Buteo buteo* was recorded flying above the fields to the south of the Moyne Road and areas of gorse scrub in the east of the site. Other breeding birds recorded during the 2019 surveys included Robin, Goldfinch, Greenfinch, Wren, Heron *Ardea cinerea*, Mistle Thrush and Blackbird.

Given the dense vegetation, much of which is considered suitable for breeding birds, and the diversity of breeding birds known to use the lands, including a number of bird species currently considered to be of conservation concern (e.g. on either the red or amber list), the site is considered to be of County importance for breeding bird species.

Wintering birds

Previous winter bird surveys conducted by Nairn and Fox over the 2016-2017 survey period (Nairn & Fox, 2017) covered the subject lands by subdividing the area into three smaller distinctive units; Maynestown area which covered the portion of the site north of the Moyne Road; Racecourse lands which comprised the portion of the site north of Red Aches road up to the Moyne Road and finally Red Arches park which comprised the playing pitches to the south of Red Arches road. The Maynestown area supported significant winter populations of Skylark, Tree Sparrow *Passer montanus* and Linnet. Good numbers of Meadow Pipit and Reed Bunting were also observed here. The Racecourse lands were deemed to be relatively unimportant for waterbirds due to the change in habitat from grassland to scrub making it largely unsuitable for these types of birds. No geese or other waterbirds were recorded here over the course of the 2016-2017 surveys, despite the fact that the central area was used by foraging Light-bellied Brent Geese *Branta bernicla hrota* during 2011-2012 surveys (see Pierce & Dillon, 2012). Red Arches park supported large flocks of Light-bellied Brent Geese and smaller numbers of Oystercatcher *Haematopus ostralegus* and Common Gull *Larus canus*. This park, along with Seagrange Park to the south, is considered to be of major importance for Light-bellied Brent Geese and Black-tailed Godwit based on the results of the 2016-2017 surveys.

Winter bird surveys carried out by Scott Cawley in February and March 2019 recorded Light-bellied Brent Geese at the playing pitches at Red Arches park on all but one occasion. Eight separate surveys were carried out, including two weekend surveys. The peak count of Light-bellied Brent Geese recorded at Red Arches playing pitches was 800, recorded foraging on the 26th February 2019. The lowest number recorded was 62 on the 21st March. Peak numbers recorded on weekend surveys were below average, 234 on 23rd March and 120 on 30th March (average peak was 345). Based on the ring code data gathered over the eight surveys, 33 individual birds were recorded on site on multiple survey dates. Other birds recorded at the Red Arches pitches over the course of the survey period included Oystercatcher, Mallard, Black-headed Gull *Chroicocephalus ridibundus*, Herring Gull *Larus argentatus*, Common Gull, Curlew *Numenius arquata*, Little Egret *Egretta garzetta*, Lesser Black-backed Gull *Larus fuscus* and Black-tailed Godwit *Limosa lapponica*, although none of these species were recorded in significant numbers. Disturbance events recorded included loose dogs, runners, cyclists, walkers and maintenance works to the pitches, and ranged from high level disturbances (e.g. dog chasing geese) to low level (e.g. solitary runner). Data gathered during the transect surveys showed that goose droppings were consistently found along transects at each survey visit, indicating that goose activity on the site is high. Geese were often observed flying between Baldoyle SPA and the pitches, indicating that the pitches act as part of a supporting network to the SPA, and the bird populations it contains.

In contrast to this, Light-bellied Brent Geese were only recorded once over the course of the survey period – on the 15th March- at the amenity grassland area to the north of Red Arches road. Approximately 30 Light-bellied Brent Geese landed very briefly (<1 minute) before flying northwards. Geese were not recorded on any other visit in this area. Transect data collected for this area also showed that the area was used far less intensively than the Red Arches pitches. Droppings were low in number and the location of the droppings indicate that the geese only use the brow of the hill in this area, possibly due to the fact that the brow of the hill would offer them a better vantage point when foraging. There was no evidence to support the hypothesis that Light-bellied Brent Geese use the area of amenity grassland to the north of Red Arches road when they are disturbed at the Red Arches pitches. In fact, when disturbance events, which yielded a strong response (e.g. geese left the site) from foraging geese, occurred on the pitches, geese tended to return to Baldoyle Bay until the source of disturbance had left the pitches.

In summary, the results of the Scott Cawley surveys conducted in 2019 broadly align with previous survey results in that they confirm that the pitches to the south of Red Arches Road are likely to be of major importance to the Dublin winter population of Light-bellied Brent Geese. Peak counts here were on average 345 birds which is very close to the 1% threshold used to determine whether a site is of international importance for bird species (for Light-bellied Brent geese the 1% threshold number is 400 as quoted in Lewis et al., 2019), and considering peak counts from previous seasons this site is likely to remain being of major significance for this species. The pitches at Red Arches are therefore regarded as being of international importance for wintering birds, specifically Light-bellied Brent Geese, given the number of geese recorded here, with respect to 2019 surveys and previous survey work, and the connections the pitches hold with Baldoyle Bay SPA. In contrast to this, the significance of the amenity grassland to the north of Red Arches road is deemed to range from local importance (higher value) to international importance, considering the difference between survey results in 2019, which recorded low numbers (approximately 30) of Light-bellied Brent geese on this site on one occasion only, compared with those of previous years..

Bats

Whilst no bat surveys were conducted by Scott Cawley Ltd. in 2019, it is worth noting the results of previous bat surveys which have been carried out on site. The most recent bat survey was carried out by volunteers from the Dublin Bat Group in August 2018 and recorded two species of bat on site- Common Pipistrelle bat and Leisler's bat. All bats recorded were commuting through the site. Bat surveys conducted by Keeley in September 2016 recorded three species of bat in the vicinity of the site- Common Pipistrelle bat, Soprano Pipistrelle bat *Pipistrellus pygmaeus* and Leisler's bat. Activity on site for both surveys was considered to be low and the habitats present on site were not considered to be particularly favourable for local bat species. Nevertheless, bats are afforded strict protection under Irish and international legislation and are therefore regarded to be of local importance (higher value).

Amphibians

Whilst no dedicated surveys for amphibians, such as Common Frog and Smooth Newt, were undertaken, given the results of the desk study, which indicates their presence in the vicinity of the proposed development site, and the presence of suitable habitat within the site to support such species (e.g. wet grassland, rivers and drainage ditches etc.), it is reasonable to assume that such species could utilise the site, and as such their presence cannot be excluded. The subject lands are considered to be of local importance (higher value) for protected amphibian species.

5.5. SUMMARY OF KEY ECOLOGICAL FEATURES

All ecological features identified as key ecological receptors (KERs) based on the completion of a desk study, literature review and field surveys are summarised in Table 5. KERs are ecological features that are protected in Ireland and/or valued as local importance (higher value) or higher and have been identified as at risk of potentially significant impacts from the proposed development.

Designated sites are included as KERs in this instance due to the connection between the subject lands and designated sites in Baldoyle Bay. Information for the completion of the Appropriate Assessment has been undertaken and a separate report (Natura Impact Statement (NIS)) to that effect has been prepared by Scott Cawley for this application. Nationally designated sites, such as pNHAs, are KERs of national importance, given their roles as ecological refuges for flora and fauna in the wider environment.

Hedgerows are regarded as KER's in light of policies of the *Fingal Development Plan 2017-2023* (Fingal CoCo, 2017), which affords them protection, and in light of their diversity and level of naturalness. Hedgerows also provide ecological connectivity to the wider environment which allows fauna to traverse across the area.

Upper saltmarsh has been identified as a KER as, according to the *Fingal Biodiversity Action Plan 2010-2015*, saltmarsh habitats are among the most important nature conservation areas in Fingal. In addition, Baldoyle Bay SAC is designated for the presence of specific saltmarsh habitats - Atlantic Salt Meadows [1330] and Mediterranean Salt Meadows [1410].

Reed and large sedge swamps are deemed to be KERs as they are a wetland habitat. Wetland habitats are relatively uncommon in Fingal (Fingal County Council, 2017) and provide a valuable niche for species including birds and invertebrates.

Depositing/ lowland rivers, such as the River Mayne, are deemed to be of County importance given the rivers significance in Fingal County. Rivers such as the Mayne also offer good salmonid spawning potential and support many aquatic species.

Drainage ditches on site, have been identified as KERs given their connectivity to the wider surface water network and their potential to support aquatic flora and fauna.

Dry meadows and grassy verges have been identified as KERs because of the species richness of this habitat and the valuable breeding habitat they provide for a range of breeding birds which are known to use the site including Meadow Pipit, Skylark and Snipe.

Wet grassland is regarded as a KER as this habitat type has been identified as a "target habitat" and "bufferzone" in the *Fingal Biodiversity Action Plan 2010-2015*.

Rare and protected flora species, which have been recorded within the subject lands in previous years, are KERs due to their scarcity within Fingal.

Otter are deemed to be KERs due to the protection they are afforded at national level (under the Wildlife Acts) and international level (under the Habitats Directive). Otter are known to occur within the subject lands, specifically within the River Mayne.

Badger has been included as a KER, given their protection under the Wildlife Acts and the suitability of habitats on site to support such species.

Hare and Hedgehog have been included as KERs, given their protection under the Wildlife Acts, their known presence within the vicinity of the subject lands and the suitability of habitats on site to support such species. Likewise, Pygmy Shrew and Irish Stoat have also been included as KERs, given their protection under the Wildlife Acts, their known presence within the vicinity of the subject lands and the suitability of habitats on site to support such species.

Bats have been identified as KERs due to the strict legal protection afforded to them under the Wildlife Acts and Habitats Directive. Bats are not thought to be roosting on site but have been shown to commute and forage through the subject lands.

Breeding birds have been included as KERs as all birds, their nests and their eggs are protected under the Wildlife Acts. Furthermore, a wide range of birds, some of which are considered to be of conservation concern, are known to breed within the subject lands.

Wintering birds are regarded as KERs due to the large numbers of Light-bellied Brent Geese which have been recorded on the playing pitches at Red Arches over the years. Disturbance or other adverse impacts on these bird species could in effect result in impacts at the population level or greater.

Amphibian species have been included as KERs, given their protection under the Wildlife Acts, their known presence within the vicinity of the subject lands and the suitability of habitats on site to support such species.

Invasive species are not considered to be KERs but rather ecological constraints. It will be necessary to continue with the implementation of the current treatment plan being undertaken by Fingal County Council with regards stands of Japanese Knotweed on site. A control/ eradication programme for other invasive species on site (e.g. Three-cornered Leek and Giant Hogweed) will also need to be implemented to prevent further spread both within the site and further afield.

Table 5: Ecological Evaluation of Key Ecological Receptors (Highlighted in grey)

Habitat / Species	Highest Ecological Valuation Level	Key Ecological Receptor?
Designated Sites		
Designated Sites	National-International	**Yes**
Habitats & Flora		
Stonewalls & Other Stonework (BL1)	Local importance (lower value)	No
Drainage Ditch (FW4)	Local importance (higher value)	**Yes**
Hedgerow (WL1)	Local importance (higher value)	**Yes**
Treeline (WL2)	Local importance (lower value)	No
Horticultural Lands (BC2)	Local importance (lower value)	No
Buildings & Artificial Surfaces (BL3)	Negligible importance	No
Upper Saltmarsh (CM2)	County Importance	**Yes**
Spoil & Bare Ground (ED2)	Local importance (lower value)	No
Recolonising Bare Ground (ED3)	Local importance (lower value)	No
Refuse & Other Waste (ED5)	Negligible importance	No
Other Artificial Lakes & Ponds (FL8)	Local importance (lower value)	No
Reed & Large Sedge Swamps (FS1)	Local importance (higher value)	**Yes**
Depositing/ Lowland Rivers (FW2)	County Importance	**Yes**
Improved Agricultural Grassland (GA1)	Local importance (lower value)	No
Amenity Grassland (GA2)	Local importance (lower value)	No
Dry Meadows & Grassy Verges (GS2)	Local importance (higher value)	**Yes**
Wet Grassland (GS4)	Local importance (higher value)	**Yes**
Scattered Trees & Parkland (WD5)	Local importance (lower value)	No
Scrub (WS1)	Local importance (lower value)	No
Ornamental/ Non-native Shrubs (WS3)	Local importance (lower value)	No
Protected and/or Threatened Species		
Rare/Protected Flora Species	County Importance	**Yes**

Habitat / Species	Highest Ecological Valuation Level	Key Ecological Receptor?
Otter	Local importance (higher value)	**Yes**
Badger	Local importance (higher value)	**Yes**
Hare and Hedgehog	Local importance (higher value)	**Yes**
Pygmy Shrew and Irish Stoat	Local importance (higher value)	**Yes**
Bats (commuting & foraging)	Local importance (higher value)	**Yes**
Other mammals	Local importance (lower value)	No
Breeding Birds	County importance	**Yes**
Wintering Birds	Local importance (higher value)- International Importance	**Yes**
Amphibian species (e.g. Common Frog and Smooth Newt)	Local importance (higher value)	**Yes**
Other Constraint Features		
Invasive species	Constraint feature	No

6. CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

Full details of the proposed development can be found in the accompanying documentation for this planning application. Please see DN1815-101 and associated drawings for further details.

The proposed park development will be located on lands between Baldoyle and Portmarnock, namely the area between Grange Road and Station Road, segmented by the Moyne Road.

The proposed park development project falls under an overall masterplan for the Racecourse Park area in Baldoyle. The masterplan seeks to propose a coherent approach to the development of the future park by the integration of the SACs and the Coastal Greenway to the East of the site. The Masterplan Design Report, prepared by BSLA, outlines the overall concept behind the park development proposal, including a number of measures to enhance the biodiversity of the Racecourse Park lands (BSLA, 2021).

Taking a lead from the Baldoyle-Stapolin LAP and in particular Figure 4A.0 Green Infrastructure Context the design seeks to ensure that the natural, cultural, and health requirements of communities are integrated into, and not compromised by, new development.

The LAP utilises green infrastructure as a means of developing a strategy in relation to the following key areas: the conservation and enhancement of biodiversity; the provision of accessible parks, open spaces and recreational facilities; the sustainable management of water and the maintenance of sensitive landscapes.

Baldoyle-Stapolin and the surrounding areas have a natural environment which incorporates both nationally and internationally important sites in terms of wildlife and habitats.

The proposed design seeks to create a connection between Seagrange Park to the South the amenity areas presently between Admiral Park and Castlerosse View, extending north across Red Arches Road

into the open space east of The Coast development. The park extends further north across Moyne Road, ending at the boundary with Station Road roundabout.

The southern part of the development has a higher density of amenities as it houses facilities such as the community centre with associated play areas for lower age groups, existing pitches, a bowling green and a MUGA, alongside a network of cycle and pedestrian paths.

Furthermore, the masterplan also accommodates a skate park/teenage play area and a dog park in carefully chosen locations away from ecologically sensitive areas and a new string of attenuation ponds increasing the ecological value in some areas alongside the provision of a viewing platform overlapping the ponds and taking advantage of sight lines.

A recorded monument lies on the northern area of the site which the proposal seeks to pay homage to by tracing of its original footprint.

This area is also connected to the remainder of the site by the extension of the cycle and pedestrian network found throughout. This area also houses an existing bird feeding and nature development area which the proposal seeks to leave untouched.

The following works are to be undertaken as part of the current application:

- 4.5km of new walking and cycling routes including a bridge over the Mayne river and the repair to the railway underpass;
- A new 6358m^2 car park catering for 96 spaces;
- Upgrading and expanding the existing playground;
- A new 2234m^2 Skate park and Teenage Adventure Playground;
- Two new 18m x 40m astroturf Multi use games areas;
- A new 11906m^2 dog run;
- Tracing of circular archaeological feature through soft landscaping and removal of existing fence;
- New entrance wall to coastal greenway northern entrance;
- Development of 4 grass football pitches;
- Development of a 1224m^2 Bowls green;
- Creation of 3no. attenuation ponds;
- Extension of existing reedbed south of Mayne river and creation of new brackish grassland north of Mayne river;
- Provision of Public lighting along key walking and cycling routes; and;
- All landscaping works in the park.

The southern part of the proposed park will have a higher density of amenities as it houses facilities such as the community centre (subject to a separate planning application) with associated play areas for lower age groups, existing pitches, a bowling green and a Multi-Use Games Area (MUGA), alongside a network of cycle and pedestrian paths.

The proposed skate park/teenage play area and dog park/ run will be located to the north of Red Arches Road.

The installation of new culverts into the drainage ditches to the north of the Moyne Road will require instream works.

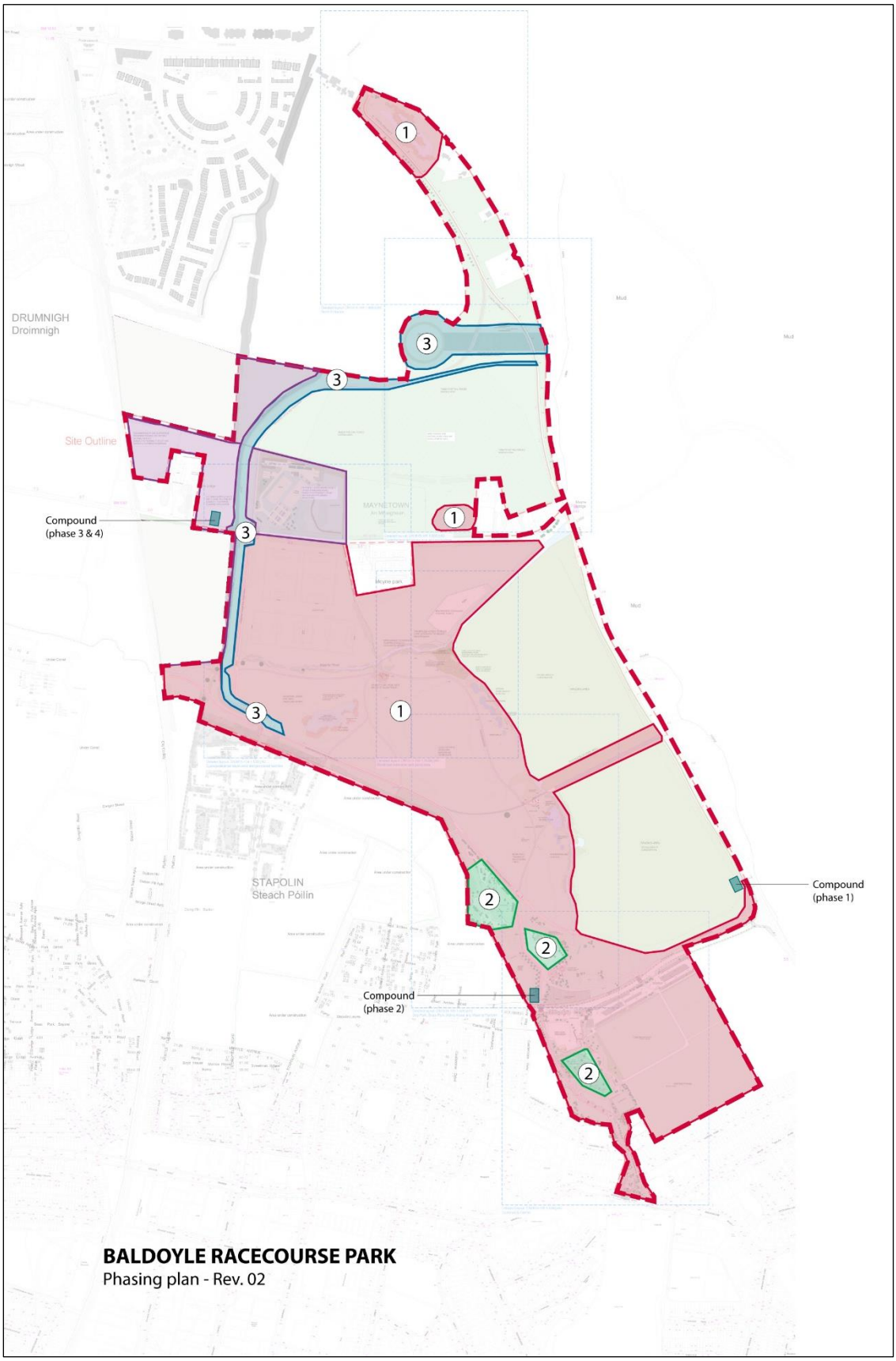
It is also proposed to create a wetland boardwalk/ viewing platform, looking out over the proposed attenuation ponds to the west of the River Snugborough. At the confluence of the River Mayne and River Snugborough it is proposed to pull back the existing outfall pipe and regrade the area locally to allow for the establishment of marsh planting/ reed beds.

The proposed park will be developed in particular phases, commencing in 2022, as outlined below:

- Phase 1 (8 months): Infrastructure such as the main car park, located to the north of Red Arches playing pitches, the walking/ cycling routes south of the Moyne Road, and the sports pitches north of the River Mayne, will be provided at this stage. The first phase will also comprise any regrading and excavations which seek to introduce a new aspect of ecology to the site (e.g. planting, ponds, regrading works etc.), as well as any improvements to the northern part of the existing Greenway entrance.
- Phase 2 (10 months): The second phase will include the provision of the proposed playgrounds, skate park and dog run.
- Phase 3 (4 months): The third phase will include the provision of a further pedestrian/ cyclist link running from the new greenway near the railway arch at Clongriffin, over the River Mayne, Moyne Road and around the paddock to link with the existing coastal greenway.

The location of construction compounds will be determined per phase of the proposed development. During Phase 1 the construction compound will be located to the north of Red Arches Road, at the junction with the Coast Road. The compound location for Phase 2 will be located just north of Red Arches Road, on an area of existing amenity grassland. Finally, during Phase 3 the construction compound will be located to the north of the Moyne Road, in an existing agricultural field. Figure 9 shows the proposed locations of construction compounds throughout the proposed development site.

Figure 9: Proposed Phasing and Locations of Construction Compounds at the Proposed Development Site (Source: Baldoyle Racecourse Park- Landscape Design Report (BSLA, 2020)).



The proposed park development project also includes a number of proposals which aim to protect and enhance existing biodiversity within the boundary of the proposed park development project. Such proposals are described below:

- Works within Baldoyle Bay SAC:
    - Creation of new brackish grassland area to the north of the River Mayne, through regrading of existing levels to allow brackish floodwaters to influence conditions, and possibly encourage the establishment of rare plant species, which previously occurred within the site (e.g. Borrer's saltmarsh grass). Please refer to Drawing C502 provided by CORA Consulting Engineers, and submitted with this planning application, for a visual representation of the regrading works proposed here; and;
    - Provision of controlled access to the River Mayne for livestock to reduce bank erosion.
- Works to the south of the Moyne Road:
    - Redesign of shape of existing SUDs pond, granted under Reg. Ref: F16A/0412, to merge more naturally with landscape and proposed wetland planting around the perimeter of this pond;
    - Removal of c. 25m of the existing outfall pipe of 1.3m internal diameter, and recontouring of surrounding lands, using the existing contours as a guide ,such that a greater area will be below 1.5m Ordnance Datum (OD) contour, which may encourage the expansion of reed bed habitat along River Snugborough. Please refer to Drawing C501, provided by CORA Consulting Engineers, and submitted with this planning application, for a visual representation of the proposed here; and;
    - Creation of a new string of attenuation ponds to the west of the River Snugborough to increase the ecological value of this area.

Landscaping planting lists have been designed in collaboration with the project ecologist. The following species are proposed for riverbank stabilisation; Goat Willow *Salix caprea*, Grey Willow *Salix cinerea,* Alder *Alnus glutinosa*, Silver Birch *Betula pendula* and Downy Birch *Betula pubescens*. Proposed wetland habitat planting will include species of native rushes, sedges and grasses, along with herbaceous species such as Water Mint *Mentha aquatica*, Meadowsweet *Filipendula ulmaria*, Flag Iris *Iris pseudacorus* and Cuckoo-flower *Cardamine pratensis*. Wildflower meadow planting is proposed in swathes within the open areas west of the proposed wetlands/ viewpoint and species here will include Devils Bit Scabious *Succisa pratensis*, Oxeye Daisy *Leucanthemum vulgare*, Purple Loosestrife *Lythrum salicaria*, Ragged Robin *Lychnis flos-cuculi*, Meadow Buttercup *Ranunculus acris* and Marsh Marigold *Caltha palustris*. Woodland whip planting will include, but is not limited to, the following species; Silver Birch, Hazel *Corylus avellana*, Downy Birch and Hawthorn *Crataegus monogyna*. For full planting lists please refer to information provided by the Landscape Architects (BSLA).

In terms of proposed lighting, the main pathways/ cycle tracks through the proposed park will be lit using 6m high LED luminaires, while the proposed car park, will be lit using 8m high LED luminaires. The lighting design aims to illuminate the pathways and car park only, will lighting being highly directional and reducing to levels close to background (i.e. 0.75 lux) within a few metres of the illuminated surfaces.

7. ASSESSMENT OF EFFECTS AND MITIGATION MEASURES

As per the relevant guidelines, likely significant impacts have only been assessed for Key Ecological Receptors, as listed in Table 5. An impact is considered to be ecologically significant if it is predicted to affect the integrity or conservation status of a Key Ecological Receptor at a specified geographical scale. All impacts are described in the absence of mitigation.

7.1. ASSESSMENT OF EFFECTS AND MITIGATION FOR DESIGNATED SITES

A Natura Impact Statement (NIS) (Scott Cawley, 2020) has been prepared for the proposed development. This document comprises an assessment of the potential of the proposed development to significantly affect European sites.

The potential effects on European sites arising from the proposed development, including, but not limited to, potential impacts on migratory bird species, as described in the NIS, may also negatively affect the pNHA sites located within the boundaries of these European sites. These pNHA sites comprise of Baldoyle Bay pNHA, North Dublin Bay pNHA, Howth Head pNHA, Ireland's Eye pNHA, Rogesrtown Estuary pNHA, Lambay Island pNHA, Malahide Estuary pNHA, Dolphins, Dublin Docks pNHA, South Dubln Bay pNHA, Booterstown Marsh pNHA and Dalkey Coastal Zone and Killiney Hill pNHA. These sites are primarily designated for similar reasons.

As per the findings of the Stage 1 Appropriate Assessment, as detailed in the NIS, likely significant effects can be excluded for all but six European sites. In this way significant effects on their corresponding pNHAs can also not be excluded. The pNHAs for which significant effects cannot be excluded comprise Baldoyle Bay pNHA, North Dublin Bay pNHA, Malahide Estuary pNHA, Rogerstown Estuary pNHA, South Dublin Bay pNHA, Booterstown Marsh pNHA and Dolphins, Dublin Docks pNHA. The NIS found that likely significant effects on the corresponding European sites could not be excluded, in the absence of mitigation. Appropriate mitigation measures are prescribed in the NIS and it has been concluded that following implementation of these measures the proposed development will not adversely affect the integrity of these European sites. Therefore significant effects on the following pNHAs, can also be excluded, following implementation of the mitigation measures outlined in the NIS: Baldoyle Bay pNHA, North Dublin Bay pNHA, Malahide Estuary pNHA, Rogerstown Estuary pNHA, South Dublin Bay pNHA, Booterstown Marsh pNHA and Dolphins, Dublin Docks pNHA.

Impacts on Howth Head pNHA, Ireland's Eye pNHA, Lambay Island pNHA and Dalkey Coastal Zone and Killiney Hill pNHA can be excluded on the basis that their corresponding European sites were assessed in the NIS and the Stage 1 Appropriate Assessment concluded that likely significant effects on the corresponding European sites could be excluded.

Impacts on the Royal Canal pNHA, Grand Canal pNHA and Portraine Shore pNHA can be excluded on the basis that there is no feasible source-pathway-receptor link between the proposed development site and these pNHAs are contained in a different sub-catchment to the proposed development site. While Santry Demesne pNHA, Sluice River Marsh pNHA and Feltrim Hill pNHA are contained in the same sub-catchment as the proposed development site (Mayne sub-catchment), both the Sluice River Marsh pNHA and Feltrim Hill pNHA lie upstream of the proposed development site, along watercourses which are not hydrologically connected to the proposed development site (e.g. Sluice River and Hazelbrook Stream). Therefore, impacts on these two pNHA sites can be excluded. Likewise, Santry Demesne pNHA lies along the River Santry, which is not hydrologically connected to the proposed development site. Therefore, impacts on this pNHA can also be excluded.

7.1.1. RESIDUAL EFFECTS

Following implementation of the mitigation measures prescribed in the accompanying NIS, residual effects on both European sites and nationally designated sites (e.g. pNHAs) will be reduced to levels not considered significant.

7.2. ASSESSMENT OF EFFECTS AND MITIGATION FOR HABITATS

The proposed park development project will not result the removal of existing hedgerow habitat from site. Accidental damage to existing hedgerows as a result of machinery strikes during construction, particularly with regards to the construction of the proposed pathways, or other sources may result in a reduction in the extent of this habitat within the site.

It is unlikely that the proposed development will result in adverse impacts on the existing upper saltmarsh habitat on site. The proposed regrading of existing levels in the agricultural field on the northern bank of the River Mayne, is intended to allow brackish floodwater to influence conditions here and allow additional saltmarsh species to establish. The introduction of a flap valve management programme (Roughan & O'Donovan, 2018), which does not form part of this application but was considered in the preparation of the Masterplan Design Report for the development (BSLA, 2021), will aid in the establishment of brackish habitats in the vicinity of the River Mayne and is likely to enhance the saltmarsh habitat on site in terms of expanding its range and increasing the species richness. In addition, it is proposed to allow for the expansion of existing reed beds along the banks of the River Snugborough further north, which will further enhance the extent of wetland habitats on site, therefore constituting a positive impact on biodiversity.

The proposals include the creation of an additional river crossing over the River Mayne, adjacent to where the existing haul road bridge is found. This is part of the third phase of the development, which includes the provision of walking and cycling routes. Improvements to the banks of the River Mayne are also proposed in certain places. Without mitigation or direction, these works have the potential to result in adverse impacts on the watercourses on site.

During construction, there will be a requirement for the establishment of construction compounds on site. The establishment of such compounds will result in habitat loss, albeit of a temporary nature, during construction. The proposed locations of these compounds are described in the Landscape Design Report, prepared by BSLA for this application. Proposed compounds are located in areas of amenity grassland and dry meadows and grassy verges. The temporary loss of these areas during construction, is not considered significant at any geographic scale considering the size of the areas to be lost in the context of the overall area of those habitats within the site boundary.

The proposed works (e.g. expansion of reed bed habitat, creation of string of ponds to east of River Snugborough, provision of playing pitches to the south of the Moyne Road, installation of proposed viewpoint and intermittent wildflower meadow planting) may result in the removal of dry meadows and grassy verges and scrub habitat. Dry meadows and grassy verges have been identified as a KER due to their species richness. However, given the relative abundance of this habitat on site, and the landscaping proposals, which includes the planting of areas of wildflower meadow, the removal of a portion of this habitat type for the purposes of developing the park, is not considered to be significant at any geographic scale. The scrub habitats identified on site are not considered to be of ecological

importance, from a habitats perspective, and therefore a reduction in the quantity of this habitat on site is of little ecological consequence.

The proposals are likely to result in positive impacts for the site's habitats also, and these should also be noted. Wetland planting is proposed for both existing attenuation ponds on site, which will increase biodiversity in these areas and possibly provide additional foraging resources for bats and pollinators on site, as well as additional breeding habitat for some bird species. The proposed intermittent areas of wildflower meadow will also provide a valuable resource for pollinators on site.

Riparian planting is proposed along some stretches of the existing watercourses on site. This planting will increase biodiversity in these areas, which will benefit invertebrates such as damselflies and dragonflies.

The proposed works do not have the potential to result in the removal/ destruction of wet grassland habitat on site. Furthermore, it is also proposed to introduce riparian planting in many of the areas currently identified as wet grassland habitat. It is not envisaged that this will have a significant impact on existing wet grassland habitat on site at any geographic scale, and will in fact enhance the quality of wet grassland habitat on site by increasing species diversity within the habitat.

Improvements to the banks of existing watercourses are proposed in particular locations. These improvements will be achieved through tree planting to stabilise the banks and thus prevent sediment loss to the river.

Finally, it should be noted that while the park proposal includes the provision of a pedestrian/ cycle route to the north of the existing fields to the north of the Moyne Road, the fields will be fenced off to the public and are of a large enough area that foraging birds, which are known to use the fields during the winter bird season, can be sufficiently removed from disturbance from pedestrians/ cyclists using this route, while foraging. The existing fields to the north of the Moyne Road will be retained and continue to be managed for foraging winter birds such as Light-bellied Brent Geese, during operation.

7.2.1 MITIGATION TO REDUCE THE IMPACTS ON HABITATS

The following measures are provided to reduce or avoid impacts to existing habitats which have been identified as KERs:

- **HAB01:** In order to protect existing hedgerows from accidental damage during construction (e.g. during the construction of the pathway network), all hedgerows which are to be retained should be afforded a buffer of 5m within which machinery etc cannot enter. This is to retain the ecological value the hedgerows on site provide. This buffer should clearly be demarcated before works commence and a toolbox talk explaining the significance of the hedgerow buffer should be given to all personnel prior to works commencing.
- **HAB02:** Riparian planting should grade into the existing adjacent habitats, which currently line the banks of the watercourses on site, to create a more natural habitat transition.
- **HAB03:** Inland Fisheries Ireland (IFI) should be consulted prior to any works to any of the watercourses on site, including proposed river crossings and bank improvement works. This is particularly relevant for the proposed bridge over the River Mayne as well as the

proposed reedbed expansion works and regrading works along the River Mayne and River Snugborough.

- **HAB04:** To control dust emissions during construction works standard mitigation measures shall include: spraying of exposed earthwork activities and site haul roads during dry and/or windy conditions; provision of wheel washes at exit points; control of vehicle speeds and speed restrictions (20 km/h on any un-surfaced site road); covering of haulage vehicles; and, sweeping of hard surface roads. These procedures will be strictly monitored and assessed on a daily basis. Dust screens will be implemented at locations where there is the potential for air quality impacts on sensitive ecological receptors (i.e. within 100m of the works), such as the watercourses on site, during the construction phase.

7.2.2 RESIDUAL EFFECTS

Residual effects on habitats will be reduced to levels not considered significant, following adherence to the measures outlined in Section 7.2.1.

7.3. ASSESSMENT OF EFFECTS AND MITIGATION TO REDUCE/ AVOID IMPACTS ON WATER QUALITY

In the absence of mitigation, the elements of the proposed development have the potential to result in detrimental effects on the surface water quality of the drainage ditches on site, the River Mayne, River Snugborough, Snugborough Stream and Maynestown Stream, and the aquatic flora and fauna it supports. This could arise through an accidental pollution event during construction (i.e. through the release of sediment/ hydrocarbons or other harmful substances directly into these watercourses), or over land runoff. This is most likely to occur during works in the vicinity of these watercourses (e.g. installation of culverts into existing drainage ditches, installation of the proposed new bridge over the River Mayne, creation of additional ponds, works to enable riparian planting etc.) Degradation of surface water quality in these watercourses could lead to impacts further downstream, as well as in the immediate vicinity of the proposed development site. Owing to the fact that these watercourses and other downstream waterbodies are considered highly sensitive and ecologically-important habitats, the effect of habitat degradation as a result of effects on surface water quality is considered to be significant, potentially at the County level.

7.3.1 MITIGATION TO REDUCE/ AVOID IMPACTS ON WATER QUALITY

The following measures are proposed with regard to specific habitat creation works, during construction:

- **WM01:** Any works in close proximity to watercourses will be restricted to taking place during the summer period only (May- August (inclusive)), when weather is drier. This is to avoid sediment and other harmful materials being transferred to watercourses, and subsequently to downstream European sites, by precipitation and surface waters flowing overland. In addition, this measure will help to ensure the early re-colonisation of any cleared areas by opportunistic plants, which will help to bind soil together and prevent any further transfer of sediment. Proposed pond/pool creation works and preparatory works for proposed playing pitches to the north of the River Mayne (e.g. vegetation clearance and regrading) will abide

by this measure. In addition, a buffer zone between the pitch locations and nearby watercourses will be established in advance of works commencing to further reduce the potential for overland flow of contaminated runoff.

Furthermore, the following measures must also be adhered to prevent any impact to water quality:

- **WM02**: An Environmental Management System (EMS) must be maintained by contractors during all phases. This should cover all potentially polluting activities and include an emergency response procedure.
- **WM03:** Specific measures to prevent the release of sediment over baseline conditions to the Mayne River, Snugborough River, Maynetown Stream and Snugborough Stream (and subsequently Baldoyle Bay) during the construction work, which will be implemented as the need arises. These measures include, but are not limited to, the use of silt traps, silt fences, silt curtains, settlement ponds and filter materials. This is particularly important when undertaking any works/upgrading to the surface and foul water drainage networks at the proposed development site. This is also of particular relevance for the proposed regrading works in close proximity to the River Mayne and River Snugborough to allow for the natural expansion of reed beds and brackish grassland habitats, as well as regrading works for the proposed football pitches, and excavations required to create the proposed attenuation ponds.
- **WM03:** Re-fuelling and maintenance/servicing of construction equipment will take place in designated bunded areas.
- **WM04:** Any fuels or chemicals (including hydrocarbons or any polluting chemicals) will be stored in a bunded area, remote from any watercourse, to prevent any seepage of same into any of the watercourses, local surface water network or groundwater, and care and attention taken during refuelling and maintenance operations.
- **WM05:** Provision of exclusion zones and barriers (*e.g.* silt fences) between earthworks, stockpiles and temporary surfaces to prevent sediment washing into any of the watercourses on site and/or existing drainage systems and hence the downstream receiving water environment.
- **WM06:** Silt traps shall not be constructed immediately adjacent to the existing watercourses, *i.e.* a buffer zone between the trap and the watercourse with natural vegetation must be left intact. Imported materials such as terram, straw bales, coarse to fine gravel should be used either separately or in-combination as appropriate to remove suspended matter from discharges.
- **WM07:** Provision of temporary construction surface drainage and sediment control measures to be in place before the construction of any pipeline and/or earthworks commence.
- **WM08:** Temporary oil interceptor facilities shall be installed and maintained where site works involve the discharge of drainage water to receiving rivers and streams.
- **WM09:** All containment and treatment facilities will be regularly inspected and maintained.
- **WM10:** Emergency procedures and spillage kits will be available and construction staff will be familiar with emergency procedures in the event of accidental fuel spillages.
- **WM11:** All trucks will have a built-on tarpaulin that will cover excavated material as it is being hauled off-site and wheel wash facilities will be provided at all site egress points.
- **WM12:** All mobile fuel bowsers shall carry a skill kit and operatives must have spill response training. All fuel containing equipment such as portable generators shall be placed on drip trays. All fuels and chemicals required to be stored on-site will be clearly marked.
- **WM13:** Design and installation of fuel tanks will be in accordance with best practice guidelines.

- **WM14:** Implementation of response measures to potential pollution incidents.
- **WM15:** Prevailing weather and environmental conditions will be taken into account prior to the pouring of cementitious materials for the works adjacent to any of the watercourses on site and/or surface water drainage features, or drainage features connected to same. Pumped concrete will be monitored to ensure no accidental discharge. Mixer washings and excess concrete will not be discharged to any watercourses or existing surface water drainage systems. Concrete washout areas will be located remote from any watercourses or any surface water drainage features, where feasible, to avoid accidental discharge to watercourses.
- **WM16:** A suitable risk assessment will be completed for all concrete works to outline measures to prevent discharge of wastewaters or contaminated stormwater to any of the watercourses on site.
- **WM17:** The removal of any made ground material, which may be contaminated, from the construction site and transportation to an appropriate licenced facility shall be carried out in accordance with the Waste Management Act, best practice and guidelines for same.
- **WM18:** A discovery procedure for contaminated material will be prepared and adopted by the appointed contractor prior to excavation works commencing on site. These documents will detail how potentially contaminated material will be dealt with during the excavation phase.
- **WM19:** Implementation of measures to minimise waste and ensure correct handling, storage and disposal of waste (most notably wet concrete, pile arisings and asphalt).
- **WM20:** Any effluent generated by temporary on-site toilet facilities will be taken off site for appropriate treatment.
- **WM21:** Discharge from any vehicle wheel wash areas will be directed to on-site settlement tanks/ponds. Debris and sediment captured by vehicle wheel washes will be disposed off-site at a licensed facility.
- **WM22:** Any hazardous waste residuals or potentially contaminated sludge from spill clean-up will be stored within appropriate containers in temporary bunded storage areas prior to removal by an authorized waste management contractor for off-site treatment/recycling/disposal.
- **WM23:** Where works are taking place within 10m of the edge of a watercourse or tributary thereof, a Fisheries Protection/Construction Method Statement will be prepared demonstrating how pollution of watercourses during and after the construction period will be prevented and/or mitigated. This will only apply if, at the detailed design stage when the site is being marked out, there are proposed works that will incur into this 10m zone.
- **WM24:** Weather conditions and seasonal weather variation will be taken into account when planning stripping of topsoil and excavations, with an objective of minimising soil erosion and sediment runoff.

7.3.2 MITIGATION FOR THE PROTECTION OF WATER QUALITY

Residual effects on water quality will be reduced to levels not considered significant, following adherence to the measures outlined in Section 7.4.1.

7.4. ASSESSMENT OF EFFECTS AND MITIGATION FOR RARE & PROTECTED FLORA SPECIES

During construction, there is a small possibility that proposed works, in certain locations, have the potential to effect rare and protected plants that have been known to occur on site. Rare plants recorded by Fitzgerald in 2017 and Denyer Ecology in 2019, are mapped in Figure 6. No works are proposed in the area where Pyramidal Orchid are known to occur, near the Moyne Bridge, and therefore no mitigation measures are proposed for this species. According to the *Ireland Red List No. 10 Vascular Plants* (Wyse-Jackson et al., 2016) the conservation status of Pyramidal Orchid is "*least concern*". Ragged Robin occurs in close proximity to the banks of the River Snugborough, in existing reed beds. Ragged Robin is also deemed to be of "*least concern*" in terms of conservation status. No works are proposed in the known location of Ragged Robin and therefore no mitigation is proposed for this species. Common Water-crowfoot occurs on wet muddy ground by the eastern edge of the Snugborough Stream. Works in this area are restricted to thinning locally retained shrubs and small trees and reinforcing with additional whip planting of native species on elevated sections. These works are unlikely to result in direct impacts on rare/ protected flora species. Nonetheless, a precautionary approach has been adopted and mitigation in this regard has been prescribed. The conservation of Common Water-crowfoot is of "*least concern*". No works are proposed in the vicinity of the known locations of Clustered Stonewort, Lesser Marshwort or Reflexed Saltmarsh-grass, and therefore no mitigation is proposed here.

Considering the above, it can be concluded that direct impacts on rare flora species, as a result of the proposed development, can largely be excluded. Given the fact that the majority of rare species identified on site are associated with the existing watercourses on site, they could be indirectly affected by any degradation in surface water quality of the River. However, mitigation to this effect has been provided in Section 7.3.

7.4.1 MITIGATION FOR RARE & PROTECTED FLORA SPECIES

The following measures are proposed to reduce impacts on rare/protected flora species known to occur on site:

- **RF01:** A pre-construction survey for rare and protected flora species should be carried out on site, by a suitably qualified ecologist, within a suitable survey season, in advance of any works being undertaken. This survey should form an update to previous surveys of this kind undertaken and should accurately map the location and extents of any rare/protected flora species identified. The results of this survey should be considered in the development of the park.

7.4.2 RESIDUAL EFFECTS

Residual effects on rare and protected flora will be reduced to levels not considered significant, following adherence to the measures outlined in Section 7.4.1.

7.5. ASSESSMENT OF EFFECTS AND MITIGATION FOR BATS

All bat species in Ireland are protected under the *Wildlife Acts 1976-2012* and are listed in Annex IV of the EU Habitats Directive 92/43/EEC (as amended). It is an offence under Section 23 of the Wildlife Acts 1976-2012 and under Section 51 of *the European Communities (Birds and Natural Habitats) Regulations, 2011* to kill or to damage or destroy the breeding or resting place of any bat species. Under the Birds and Natural Habitats Regulations it is not necessary that the action should be deliberate for on offence to occur. This places an onus of due diligence on anyone proposing to carry out works which might result in such damage or destruction.

Previous surveys have found that small numbers of bats are known to commute through and forage within the site, primarily along the existing haul road, along the River Mayne and in areas of dry meadows and grassy verges and scrub on the eastern side of the site, to the north of Red Arches Road. There is no evidence to suggest that bats are roosting within the site. However, during construction, works required to upgrade the existing railway bridge along the western boundary of the site have the potential to result in adverse impacts on roosting bats, if present, due to the potential suitability of the bridge's stonework to contain crevices which could support roosting bats. Works to the existing railway bridge will include re-pointing, required due to the current state of disrepair which the bridge is in.

The proposed park development project will not result in the felling any mature trees, and therefore there is no potential for impacts on trees which could potentially support roosting bats as these will be unaffected by the proposals.

The proposed development will result in an increase in artificial night-time lighting on site. Post-construction the proposed development will require lighting during operation for public safety and access. Although some bat species do feed on insects attracted to artificial light, it is generally accepted that lighting tends to displace bats from an area. The magnitude of operational impacts on bats will depend on the species and number of bats affected. The proposed lighting design has been created to illuminate the pathways, cycle tracks and car park only, with the remainder of the site remaining unlit. Light-spill modelling for the proposed design indicates that light levels will quickly reduce to close to background levels (e.g. 0.75 lux) within a few metres of the illuminated surfaces. Therefore, it can be concluded that post-construction bats will still be able to use the majority of the site for foraging and commuting purposes. Given the low levels of existing bat activity known from the site, and the presence of three common bat species, the magnitude of operational impacts as a result of artificial lighting is regarded to be significant at a local level only.

7.5.1 MITIGATION FOR BATS

The following measures are proposed in relation to works to the railway bridge:

- **BM01:** An up-to-date inspection of the existing railway bridge must be carried out prior to any works being carried out on this structure. This will involve a suitably qualified bat ecologist inspecting the structure during daylight hours and assessing its potential to support roosting bats. Following on from this, bat surveys will be carried out to determine whether or not the bridge supports roosting bats. Bat surveys will be carried out in accordance with Bat Conservation Trust Guidelines (Collins, 2016). The number of bat surveys required will be

determined following the results of the daytime inspection and will be in accordance with the guidance detailed in Collins (2016). An Ecological Clerk of Works will be appointed for this work.

The following measures are prescribed in relation to the installation of artificial lighting on site, and minimising the effects this may have on populations of local bats:

- **BM02:** Any external lighting to be installed, including facilitating night-time working or security lighting during construction, on the site should be sensitive to the presence of bats in the area. Lighting of the site will be designed in accordance with the following guidance:
    - Guidance Notes for the Reduction of Obtrusive Light GN01 (Institute of Lighting Professionals, 2020)
    - Bats & Lighting - Guidance Notes for Planners, Engineers, Architects and Developers (Bat Conservation Ireland, December 2010)
    - Bats and Lighting in the UK – Bats and the Built Environment Series (Bat Conservation Trust UK, January 2008).

7.5.2 Residual Effects

Residual effects on bats will be reduced to levels not considered significant, following adherence to the measures outlined in Section 7.5.1.

7.6. Assessment of Effects and Mitigation for Otter

The proposed development site is known to be used by Otter, particularly the watercourses on site, which are likely to be used for foraging and commuting purposes. The park development proposals will not result in any significant changes to the watercourses on site- a new bridge will be constructed over the River Mayne and planting will also occur. New culverts will be installed in drainage ditches on site, in fields to the north of the Moyne Road. These works are not expected to significantly impact populations of local Otter. The proposed 5m span bridge will not require any instream works but rather excavations for abutment foundations will be located back from the stream edge so as not to impede stream/ water flows.

While the proposed development will result in increased human presence on site, the potential effects on Otters in terms of disturbance during the construction phase are, for the most part, not significant in this instance. This is because, the proposed construction works are limited in terms of scale, particularly in the vicinity of the watercourses on site, consisting mainly of landscaping works, and works will be largely confined to daylight hours, when otters are least likely to forage within the proposed development site. Even in the event that the construction phase of the proposal coincides with construction of other projects in the immediate vicinity, there will be no significant disturbance or displacement effects on Otters. Otters are widespread in Ireland and found in close proximity to human settlements, including in Dublin City, and therefore are likely to adapt to changes in human activity levels in the proposed development site and surrounding area.

During the operational phase of the proposed development, human activity will increase, as will artificial lighting, in comparison with the baseline conditions. As Otters are mainly nocturnal creatures, and human activity across the proposed development site will largely occur during daylight hours, the effects of human disturbance on Otter are not deemed to be significant at any geographical scale. The proposed development does not include the installation of artificial lighting along any of the existing watercourses, but rather along the main pedestrian/cycle route through the site. Therefore, it is highly

unlikely that the artificial lighting proposed will result in any light spill onto any of the watercourses and impacts on Otter as a result of artificial lighting during operation can be excluded.

In the absence of any mitigation, there is potential for a pollution event during the construction phase of the proposed development to result in impacts on Otters in the locality. Potential impacts include fish kill (thereby affecting prey availability within the watercourses on site and potentially further downstream) and indirect effects of impacts on water quality. Accidental spillages into any of the watercourses on site, would in turn adversely affect Otters in the locality, as oil has a negative effect on the Otter's waterproof coat and thus negates their ability to control body temperature in water. Furthermore, Otters may be affected by contamination of water by heavy metal compounds through bioaccumulation in their prey items. Regarding the potential for an accidental oil spillage, the effects on prey availability could be amplified should a pollution episode coincide with a pollution event triggered by other plans, projects, or land use activities in the Mayne sub-catchment. The effects on Otter would likely be significant at the local geographic level.

7.6.1 Mitigation To Reduce The Impacts On Otter

As otter could potentially establish new holts in the future within the ZoI of the proposed development, in particular along the River Mayne, a pre-construction check of all suitable habitat along the banks of the watercourses within the proposed development site will be required within 12 months of any construction works commencing. Any new otter holts present will be afforded protection in line with the requirements set out in the National Roads Authority's *Guidelines for the Treatment of Otters Prior to the Construction of National Road Schemes* (2008).

Mitigation with regards the protection of surface water quality in receiving waters and prevention of pollution are contained in Section 7.3.1.

7.6.2 Residual Effects

Residual effects on otter will be reduced to levels not considered significant, following adherence to the measures outlined in Section 7.6.1 and 7.3.1.

7.7. Assessment of Effects and Mitigation for Badger

Despite the fact that no signs of badger activity were recorded during the surveys conducted on site in 2019, the site has the potential to be used by foraging and commuting badger. This is due to suitable foraging and commuting habitat on site. The conversion of portions of the proposed development site to buildings and artificial surfaces (e.g. provision of skate park, dog run, car park etc)., and landscaping proposals associated with the proposed park, will reduce the amount of semi-natural habitat available for foraging badgers within the site. However, the overall loss of habitat is not considered to be significant at any scale, considering the average badger territory size of more than 80ha in Ireland[19], and the abundance of available suitable habitat (e.g. agricultural lands and associated boundary hedgerows and treelines to the west of the railway line) surrounding the proposed development site.

While the proposed development will result in increased human presence on site, the potential effects on badgers in terms of disturbance are not significant in this instance. This is because, the proposed construction works will be carried out over a relatively short period of time (i.e. 24 months in total

[19] "Studies in several Irish counties have shown that territory size can vary from as little as 15ha to almost 300ha, with a mean of 80ha". Source: https://www.vincentwildlife.ie/species/badger

over four phases ranging between 2-10 months each), and works will largely be confined to daylight hours, when badgers are least likely to forage in the vicinity of the proposed development site. Even in the event that the construction phase of the proposal coincides with construction of other projects in the immediate vicinity, there will be no significant disturbance or displacement effects on badgers. Badgers are widespread in Ireland and found in close proximity to human settlements, including in Dublin City, and therefore are likely to adapt to changes in human activity levels in the proposed development site and surrounding area.

In the absence of mitigation there is potential for accidental direct harm to badgers to occur during construction. This is because it is a possibility that Badger will establish new setts within the proposed development site before construction works commence, and the locations of potential newly established setts could be within the ZoI of the proposed development. This scenario has been taken into account in the mitigation strategy. Owing to the legal protection afforded to badgers under the Wildlife Act, every care should be taken to prevent direct and indirect harm coming to badgers.

7.7.1 Mitigation To Reduce The Impacts On Badger

The mitigation measures described below follow the recommendations set out in the *Guidelines for the Treatment of Badgers during the Construction of National Road Schemes (*National Roads Authority, 2006c). These guidelines set out the best practice approach in considering and mitigating impacts on badgers during construction works.

As badger could potentially establish new setts in the future within the ZoI of the proposed development, a pre-construction check of all suitable habitat within the proposed development boundary will be required within 12 months of any construction works commencing. Any new badger setts present will be afforded protection in line with the requirements set out in the TII/NRA guidance document as follows:

- Badger setts will be clearly marked and the extent of bounds prohibited for vehicles clearly marked by fencing and signage
- No heavy machinery shall be used within 30m of badger setts; lighter machinery (generally wheeled vehicles) shall not be used within 20m of a sett entrance; light work, such as digging by hand or scrub clearance shall not take place within 10m of sett entrances
- During the breeding season (December to June inclusive), none of the above works shall be undertaken within 50m of active setts, nor blasting or pile driving within 150m of active setts
- Works can be undertaken within these zones following consultation with, the approval of and, if required, under the supervision of a badger ecologist

As the proposed development will not result in the loss of any badger setts, there is no requirement to construct any artificial setts as part of the mitigation strategy.

7.7.2 Residual Effects

Residual effects on badger will be reduced to levels not considered significant, following adherence to the measures outlined in Section 7.7.1.

7.8. Assessment of Effects and Mitigation for Hare, Hedgehog, Pygmy Shrew & Irish Stoat

The proposed development site has the potential to be used by hare, hedgehogs, pygmy shrew and Irish stoat, due to the presence of suitable habitat for foraging and commuting purposes, and their presence in the wider environment as identified during the desktop review. The conversion of portions of the proposed development site to buildings and artificial surfaces (e.g. provision of skate park, dog

run, car park etc)., and landscaping proposals associated with the proposed park, will reduce the amount of semi-natural habitat available for foraging hare/ hedgehog/ pygmy shrew/ Irish stoat within the site. Considering the abundance of similar habitats in the wider environs (e.g. agricultural lands and associated boundary hedgerows and treelines to the west of the railway line), the overall loss of habitat for hare/ hedgehog/ pygmy shrew/ Irish stoat is not considered significant at any geographic scale.

Furthermore, given the relatively low numbers of individuals of each species that are likely to be affected, and that they are highly mobile species, vegetation clearance is unlikely to result in a level of mortality that would affect the species' conservation status, and result in a significant negative effect, even at a local geographic scale.

In conjunction with any displacement effects associated with habitat loss, increased human presence and/or noise and vibration associated with construction works, has the potential to displace hare, hedgehog, pygmy shrew and Irish stoat from both breeding/resting places and from foraging habitat. However, given the predicted duration of construction (i.e. 24 months in total over four phases ranging between 2-10 months each) for the proposed development, disturbance will be a temporary impact and is therefore extremely unlikely to result in any long-term effects on the local hare/ hedgehog/ pygmy shrew/ Irish stoat populations or their conservation status. Therefore, disturbance/displacement during construction is unlikely to result in a significant negative effect, at any geographic scale.

7.8.1 Mitigation To Reduce The Impacts On Hare & Hedgehog

As there is no risk of a significant negative effect from the proposed development on the local populations of hare/ hedgehog/ pygmy shrew/ Irish stoat, mitigation measures intended to avoid or reduce any harmful effects on their populations are not required.

7.8.2 Residual Effects

No residual effects on hare, hedgehog/ pygmy shrew or Irish stoat are predicted as a result of the proposed development.

7.9. Assessment of Effects and Mitigation for Breeding Birds

All wild bird species are protected under the *Wildlife Acts 1976-2012* and it is an offence to disturb birds while on their nests, or to wilfully take, remove, destroy, injure or mutilate their eggs or nests.

In the absence of adoption of protocols for the protection of birds and their nests, there is potential for direct impacts on nesting birds and/or mortality of birds arising from the clearance of vegetation within the subject lands. Examples of works which could lead to such potential impacts include the thinning of existing shrubs/ small trees along the existing watercourses on site, pitch development works and the regrading works proposed in close proximity to existing reed beds along the River Snugborough. Potential impacts on nesting birds would be most likely if works were to occur during the time of year when birds are likely to be nesting (1st March to 31st August, inclusive). Impacts arising from vegetation clearance would be significant, in the absence of mitigation.

In addition to mortality of breeding birds, there is potential for disturbance of local bird fauna arising from noise associated with construction, in addition to increased construction traffic. While there is some potential for short-term disturbance of bird species foraging within the lands at the early stage of construction, it is anticipated that birds will acclimatise to human presence. This is because the

lands are located in a suburban-rural locality, and the majority of bird species noted on site are generally associated with gardens and other suburban habitats frequented by people. The potential for disturbance of foraging bird species during construction is not considered to be significant at any geographic scale.

7.9.1 Mitigation To Reduce The Impacts On Breeding Birds

In order to avoid potential significant impacts on breeding birds, the following measures are prescribed:

- **BB01**: Where feasible, vegetation (e.g. hedgerows, trees, scrub and grassland) will not be removed, between the 1st March and the 31st August, to avoid direct impacts on nesting birds. Where the construction programme does not allow this seasonal restriction to be observed, then these areas will be inspected by a suitably qualified ecologist for the presence of breeding birds prior to clearance. Areas found not to contain nests will be cleared within 3 days of the nest survey, otherwise repeat surveys will be required.
- **BB02:** If all vegetation clearance cannot be undertaken outside of the breeding bird season, tall grassy vegetation which is to be removed should be mown on a regular basis in advance of the commencement of the breeding bird season. This may help to discourage birds from nesting in these areas, such that clearance during the breeding bird season may be possible. To ascertain whether mowing has discouraged breeding birds to the point that no breeding birds are present in these areas, a suitably qualified ecologist will be required to undertake a ground nest search and advise the contractor on their findings and recommendations regarding vegetation clearance.

7.9.2 Residual Effects

Residual effects on breeding birds will be reduced to levels not considered significant, following adherence to the measures outlined in Section 7.9.1.

7.10. Assessment of Effects and Mitigation for Wintering Birds

In the absence of mitigation, accidental spillages of oils, cement or other potential pollutants, during construction works could potentially be released into the Mayne River, Snugborough River, Maynetown Stream or Snugborough Stream and/or the existing surface water drainage network in the area and transferred into Baldoyle Bay. Qualifying Interest bird species of Baldoyle Bay SPA utilise the intertidal and estuarine habitats in Baldoyle Bay for feeding and/or roosting. These species would be vulnerable to an accidental pollution incident either directly e.g. through direct contact with oil or other polluting chemicals, or indirectly by affecting the habitats and food supply on which they rely for feeding and/or roosting within the Baldoyle Bay area. The potential impact in the absence of mitigation would be a low risk of an adverse effects on site integrity from accidental fuel, oil or concrete spills, dependent on the magnitude of the pollution event.

The proposal includes for the provision of a new car park to the north of the existing playing pitches at Red Arches park. The construction of the car park, in the absence of mitigation, has the potential to result in the permanent displacement of foraging winter birds such as Light-bellied Brent geese from

the northern area of playing pitches which is to be developed into a car park. This area comprises the northernmost part of the playing pitches which lies adjacent to Red Arches Road and is not regularly used by foraging geese, possibly due to its proximity to the road. Foraging geese tend to be found further south, towards the centre of the playing pitches rather than at the perimeter. The loss of this area is not deemed to be significant due to the low usage of the area by foraging geese and the fact that post development the majority of the playing pitches, which represents a substantial amount of suitable foraging habitat, will remain to the south of the proposed car park.

In addition, the construction of the proposed car park here could result in disturbance to winter birds such as Light-bellied Brent geese, which forage on the pitches. This could result in a profound temporary impact on goose populations, which are associated with Baldoyle Bay SPA, significant at the international level.

Finally, the proposed development will result in the displacement of geese from the area to the north of Red Arches Road which is known to be used by Light-bellied Brent Geese as an *ex-situ* inland feeding site. The proposal intends to accommodate a skate park and associated recreational activity facilities in this area. The loss of this area as an *ex-situ* inland feeding site may in turn result in a reduction in the proportion of the existing foraging habitat in the Dublin area available to Light-bellied Brent Geese, which is a finite resource, and may impact on the existing terrestrial food supply of Light-bellied Brent Geese in the Dublin area. The potential impact of this has been assessed in detail in the NIS prepared for this application (Scott Cawley, 2020) which has concluded that the proposed development will not result in any impact on the population trend of Light-bellied Brent Geese associated with Baldoyle Bay SPA, North Bull Island SPA, Rogerstown Estuary SPA, Malahide Estuary SPA or South Dublin Bay and River Tolka Estuary SPA due to the following:

- Based on the results of the overwintering bird surveys conducted by Scott Cawley in 2019, the amenity grassland to the north of Red Arches Road, which will be partly lost as a result of the proposed development (due to the provision of the skatepark, teenage play area and MUGA), are only used occasionally by Light-bellied Brent Geese. Geese were only recorded on the lands for <30 seconds over the course of surveys undertaken between 26th February and 30th March 2019. Furthermore, data contained in a 2017 report (Scott Cawley, 2017) shows that the significance of the site seems to vary from year to year, with the site being deemed to be of "*moderate*" significance between January and March in 2016 (peak count = 150) and "*major*" significant for the same period in 2017 (peak count = 455). This indicates that the lands are of historical importance for Light-bellied Brent Geese, but have not been used consistently in recent years.
- The design of the proposed park includes for the provision of additional playing pitches in the west of the site. These proposed pitches will replace existing dry meadow habitat which are currently unsuitable for foraging geese. In this way, the proposed park will enhance the potential and increase the overall area of suitable habitat available to foraging geese and will in fact result in a net gain for foraging geese. The phasing proposed for the development of the park means that these additional pitches will be in place and completed prior to any works taking place in the area of amenity grassland to the north of Red Arches Road.
- Lands to the north of the Moyne Road are currently being successfully managed for foraging Light-bellied Brent Geese (See park development plan for details of management and background). Foraging Light-bellied Brent Geese were recorded for the first time in these

lands over the 2019-2020 winter bird season (Hans Visser pers.comm.). The successful management of these lands for Light-bellied Brent Geese, as well as other wader species, has resulted in additional suitable *ex-situ* foraging resources being available to these species. Therefore, the displacement of foraging geese from the area of amenity grassland to the north of Red Arches Road, as a result of the proposed development, will not result in a significant impact on this SCI species due to the availability of suitable foraging habitat, of a much larger area, already in existence within the locality.

During operation, the value of the Red Arches playing pitches to foraging winter birds such as Light-bellied Brent Geese could be reduced due to disturbance from human activities such as dog walking. Sustained and widespread disturbance has a significant impact on birds' foraging success, energetic costs, use of feeding and roosting sites and may ultimately result in population declines (Nairn & Phalan, 2007). A wide variety of human activities are known to cause disturbance, but their effects on birds depend on their nature, frequency and extent. In general, the greater the number of people visiting a site, the greater the impact on birds is likely to be. The provision of a car park so close to the pitches could result in an increase in the number of people and dogs who run directly onto the pitches from this area, disturbing any foraging geese, thereby having a negative effect on the conservation objectives of Baldoyle Bay SPA, North Bull Island SPA, Rogerstown Estuary SPA, Malahide Estuary SPA or South Dublin Bay and River Tolka Estuary SPA.

7.10.1 Mitigation To Reduce The Impacts On Wintering Birds

The following measures are proposed to reduce disturbance impacts to wintering birds during construction:

- **WB01:** Construction activities associated with the proposed car park at Red Arches playing pitches should be restricted to the period May- August (inclusive) so as to avoid construction related disturbance to foraging geese (which are only winter visitors).
- **WB02:** Likewise, construction activities associated with the proposed skate park in the area of amenity grassland to the north of Red Arches Road should be restricted to the period May-August (inclusive).
- **WB03:** If the above measures cannot be complied with, due to an incompatible project program, then a visual screen will need to be erected around the perimeter of construction works on the pitches or amenity grassland area, to avoid visual disturbance to foraging geese.

The following measures are proposed to reduce disturbance impacts on foraging winter birds during the operation of the proposed development:

- **WB06:** The proposed car park in the northernmost part of the existing playing pitches at Red Arches, has been designed so as to lead visitors from the car park to a designated entrance to the playing pitches, located to the south-west of the proposed car park. This is to ensure that people use a defined entrance as opposed to simply running onto the pitches from any location in the car park. Furthermore, sufficient landscaping or fencing has been provided around the perimeter of the car park to ensure that loose dogs cannot simply run onto the pitches from the car park.

- **WB07:** The playing pitches and potentially the other areas in the wider park which are to be managed for geese will be zoned as "dog-free" for the winter bird season (September – April) and signs will be erected to convey this message to the public. These signs will also act as a means of public education to describe how disturbance such as loose dogs can impact geese.
- **WB08:** It will be Baldoyle Racecourse Park policy that all dogs must be kept on a lead at all times while in the park, with the exception of the dog park. This will be implemented by a by-law (see Fingal County Council's *Regional Parks & Open Spaces Bye-Laws 2017* (Fingal County Council, 2017a) for details) and enforced by Fingal County Council Park Rangers who will monitor the park.

Measures outlined in Section 7.3.1 will prevent impacts to surface waters during construction.

7.10.2 Residual Effects

Residual effects on wintering birds will be reduced to levels not considered significant, following adherence to the measures outlined in Section 7.10.1 and 7.3.1.

7.11. Assessment of Effects and Mitigation for Amphibians

The proposed development site has the potential to be used by amphibians, such as Common Frog and Smooth Newt, due to the presence of suitable habitat within the site to support such species (e.g. wet grassland, rivers and drainage ditches etc.), and their presence in the wider environment as identified during the desktop review. The most likely impact to amphibian species would be through effects to surface water quality of watercourses and drainage ditches on site as a result of construction activities (e.g. excavations, soil stripping, regrading works, which could all potentially result in the release of silt/ sediment into the receiving surface waters). Effects on surface wate quality could lead to impacts with regards habitat suitability for amphibian species. This would be significant at the local geographic scale.

7.11.1 Mitigation for Amphibians

Mitigation measures with regards the protection of surface waters and prevention of pollution to such waters is contained in Section 7.3.1.

7.11.2 Residual Effects

Residual effects on amphibians will be reduced to levels not considered significant, following adherence to the measures outlined in Section 7.3.1.

7.12. Assessment of Effects and Mitigation for Invasive Species

The proposed works will involve soil stripping, regrading, minor excavations for the creation of wetland habitat and substantial landscaping. These works have the potential to exacerbate the spread of invasive species present on site, which could result in significant impacts at the local level.

7.12.1 MITIGATION FOR INVASIVE SPECIES

the following measures are proposed to control the spread of invasive species both within the subject lands and further afield:

- **IM01:** A pre-construction invasive species survey will be undertaken prior to any works commencing on site. The aim of the survey will be to accurately map the location and extents of any invasive species identified.
- **IM02:** All invasive species listed on the Third Schedule of the *Birds and Natural Habitats Regulations* (2011), will be eradicated from the subject lands prior to any other works commencing. It should be noted that Japanese Knotweed on site has been treated by Fingal County Council for the past three years and Giant Hogweed has been treated for the past four years. Furthermore, Japanese Knotweed is located remote from any proposed works areas for the proposed park development.
- **IM03:** An Invasive Species Management Plan (ISMP), which will clearly outline the control methods to be employed for each Third Schedule invasive species recorded on site, will be prepared prior to commencement of the proposed works. A suitably qualified contractor, with experience in dealing with invasive species, will be employed to execute the ISMP.
- **IM04:** The site will be monitored for the presence of invasive species for a period of 3 years post development. Any subsequent regrowth of invasive species will be treated accordingly by a suitably qualified contractor, following best guidance.

8. CUMULATIVE EFFECTS

According to the Fingal Development Plan 2017-2023, the proposed development site is currently zoned as "*HA- High Amenity*" and "*OS- Open Space*", with the following respective zoning objectives; "*protect and enhance high amenity areas*" and "*preserve and provide for open space and recreational amenities*". The surrounding lands are largely residential in nature.

Existing or proposed projects or plans impacting on the same key ecological receptors have the potential to lead to impacts of a higher level of significance when assessed cumulatively. The most likely of these potential impacts is the potential for impacts in Baldoyle Bay via surface water discharges. The potential for cumulative impacts in Baldoyle Bay are assessed in detail below.

There is potential for potential cumulative impacts from other proposed plans and projects within the Fingal Development Plan 2017-2023 administrative area, which could influence conditions in Baldoyle Bay and the Irish Sea via rivers and other surface water features. According to the EPA's Online Map Viewer[20], the Irish Sea is currently regarded as '*Unpolluted*', while Baldoyle Bay is currently '*Eutrophic*'. The pollutant content of future surface water discharges to Baldoyle Bay and the coastal waters of the Irish Sea are considered likely to be decreased in the long-term. This is because objective SW04 of the Fingal Development Plan 2017-2023 states that it is an objective of the Plan to "*require the use of sustainable drainage systems (SUDS) to minimise and limit the extent of hard surfacing and paving and require the issue of sustainable drainage techniques where appropriate, for new development or for*

[20] EPA Online Map Viewer. Available at: https://gis.epa.ie/EPAMaps/ [Accessed 03/11/2020]

extensions to existing developments…" This objective is considered likely to reduce pressures on designated marine and intertidal species and habitats in Baldoyle Bay as a result of surface water pollution. There are also protective policies and objectives in place at a strategic planning level (e.g. the Eastern and Midland Regional Assembly's *Regional Spatial and Economic Strategy 2019-2031*) to protect water quality in Baldoyle Bay.

There are a number of existing and proposed development projects, mainly residential developments and alterations to existing developments, within the area[21] which have potential to produce potential cumulative impacts on water quality in Baldoyle Bay during their operation. However, the potential for cumulative pressures on surface waters is considered to be limited to short duration impacts resulting from construction activities which could result in elevated levels of hydrocarbons or silts entering the surface water network. In the unlikely event of a pollution event occurring during construction, given the mitigation measures proposed, this would not be of such a magnitude that would have a significant adverse effect on water quality in Baldoyle Bay, or affect the Qualifying Interest/ Special Conservation Interests of the European sites therein. There is therefore no potential for cumulative impacts as a result of surface water discharges.

Impacts on foraging winter birds, in particular Light-belllied Brent Geese, could also be significant when assessed cumulatively, given the proposed development's coastal setting. Further development in the area could result in further loss of suitable foraging habitat for Light-bellied Brent Geese or further increases in disturbance to foraging birds, both of which would have a detrimental effect on the local population of Light-bellied Brent Geese. As demonstrated in the Natura Impact Statement (NIS), which forms part of this application, the proposed park development will not result in any disturbance impacts on SCI bird species due to the mitigation measures proposed. However, existing or future plans/ projects could result in impacts to SCI birds through increased visitor pressure.

The provision of the proposed Racecourse Park is part of a strategy to assist in maintaining the conservation condition of Baldoyle Bay SAC and Baldoyle Bay SPA, by providing an alternative area for recreational activities, thereby reducing recreational pressures on the adjacent SAC and SPA. The park will also minimize the impacts of adjacent residential developments. Objective GI 12 of the Baldoyle-Stapolin Local Area Plan (Fingal County Council, 2013a) states that it is an objective of the Plan to "*provide appropriately designed and located combined pedestrian and cycle routes of no wider than 3m through Racecourse Park, and minimise access points to avoid disturbance to protected habitats and species within Baldoyle Bay and Racecourse Park*". This objective is also detailed in Section 5.5.3 of the Portmarnock South Local Area Plan (Fingal County Council, 2013b) which states that "*to relieve the potential amenity pressures away from the Natura 2000 site of Baldoyle Bay, a series of looped walks are proposed within the plan area based on the proposed green routes. A summertime walking loop is proposed through the open space lands when migratory estuarine birds are not resident… These routes extend beyond the confines of the LAP lands offering attractive walking routes to include Racecourse Park South and onwards to Baldoyle*".

The Coastal Pathway, a greenway linking Baldoyle to Portmarnock, was granted planning permission in July 2018. With respect to increased visitor pressure, particularly in the case of a known feeding

[21] https://fingalcoco.maps.arcgis.com/apps/webappviewer/index.html?id=3fa7d9df584c4d93aab202638db9dd1a [Accessed 03/11/2020]

site at Portmarnock Green which could potentially be impacted upon in this regard, the Natura Impact Statement (NIS) prepared for this planning application concluded that "*given the observable tolerance shown by Light-bellied Brent Geese for predictable and repeated patterns of disturbance (where the disturbance remains remote and does not enter the feeding area), it is not anticipated that the increased level of pedestrian and cyclist use of the path should negatively impact on use of the site by Light-bellied Brent Geese*" (Atkins, 2018).

The Baldoyle- Stapolin LAP includes a protective measure which aims at ensuring that increased visitor numbers and increase recreational use of LAP lands does not result in an adverse impact on SCI species or QI habitats of nearby European sites. Objective GI31 states that it is an objective of the Council to "*promote sustainable recreation within the LAP lands that will allow inclusive use of the open space without causing adverse effects on the physical and biological functions of the green infrastructure and/or qualifying interest species and habitats of European sites*". Any proposals in the area governed by the Baldoyle- Stapolin LAP will need to demonstrate compliance with this objective. Therefore, cumulative impacts on European sites, through increased visitor pressure, can be excluded on this basis.

Given the nature of the surrounding environment (consisting of existing residential dwellings, amenity areas and agricultural lands) it is unlikely that there would be wide-scale vegetation clearance in the surrounding locality. Agricultural lands to the west of the proposed development site are zoned as "*GB- Green Belt: Protect and provide for a Greenbelt*" with the following zoning objective vision: "*Create a rural/ urban Greenbelt zone that permanently demarcates the boundary, i. between the rural and urban areas, or; ii. between urban and urban areas. The role of the Greenbelt is to check unrestricted sprawl of urban areas, to prevent coalescence of settlements, to prevent countryside encroachment and to protect the setting of towns and/or villages. The Greenbelt is attractive and multifunctional, serves the needs of both the urban and rural communities, and strengthens the links between urban and rural areas in a sustainable manner. The Greenbelt will provide opportunities for countryside access and for recreation, retain attractive landscapes, improve derelict land within and around towns, secure lands with a nature conservation interest, and retain land in agricultural use. The zoning objective will have the consequence of achieving the regeneration of undeveloped town areas by ensuring that urban development is directed towards these areas*". This zoning objective does not allow for large-scale development on these lands and essentially protects the lands from development. Therefore, significant cumulative impacts, as a result of habitat loss or increases in disturbance to foraging Light-bellied Brent Geese, can be excluded.

Fingal County Council intend to upgrade the existing traveller accommodation on the Moyne Road in the near future (Hans Visser pers. comm.). Given the location of Moyne Park, in relation to the proposed development site, these upgrade works could, in the absence of mitigation, result in cumulative impacts with regards to surface water discharges during construction and the spread of invasive species. Mitigation measures with respect to the protection of surface waters and prevention of the spread of invasive species have been prescribed for the proposed development (see Sections 7.3.1 and Section 7.12.1), such that significant effects as a result of these issues can be excluded. Furthermore, as the existing traveller accommodation site is located within the Baldoyle- Stapolin LAP area, any proposed upgrades will be subject to Appropriate Assessment, which will include an assessment of the proposed upgrades potential to result in significant cumulative impacts on nearby European sites.

According to a review of the Fingal County Council's Online Planning Application Map Viewer[22], there are several permitted and potential developments, of varying scales, in close proximity to the proposed public park site.

Permission (Reg. Ref. F14A/0109), consequent to grant of outline permission (Reg. Ref. F10A/0328), has been granted for the development of a retirement home and hotel, and all associated infrastructure and services, on lands to the east of the Red Arches playing pitches. An Bord Pleanála granted permission for this proposal in 2015 (ABP Ref: PL06F.243832). The NIS submitted with the application concluded that the proposed development would not result in any adverse effect on Light-bellied Brent Geese or any other QI/SCI for any European sites.

There are a number of permitted residential developments in close proximity to the proposed public park site. Many of these developments received extensions of durations from Fingal County Council in recent years (e.g. Planning Reg. Ref: F03/1162/E3 and Planning Reg. Ref: F15A/0074). Other permitted residential developments in the area include the permitted development of 385 apartments, 161 houses and 1,917m^2 of commercial floorspace (ABP Ref: PL06F.248970). The An Bord Pleanála Inspector's Report states that the proposed development would not be likely to give rise to significant effects alone or in combination with other developments in the area.

Irish Water has applied for planning permission for a new wastewater pumping station, and all associated infrastructure at Station Road, Portmarnock, to the north-east of the proposed public park site (Planning Register Ref: F19A/0400). Elements of the proposed infrastructure for this development (i.e. sewers), if granted, would run through the north of the proposed public park site. The NIS submitted as part of this application concluded that the proposed development would not result in any adverse effects on Light-bellied Brent Geese or impacts on water quality or QI habitats of nearby European sites, if the mitigation measures prescribed were implemented correctly. Construction phase impacts on geese would be limited to temporary impacts on foraging geese as a result of disturbance during construction. However, it was argued that any affected foraging geese would simply be displaced to other suitable foraging resources present in the locality (Mott MacDonald, 2019). Additional information was requested in relation to this application in October 2019 which was received in April 2020. The applicant was granted planning permission by Fingal County Council in June 2020. Subsequently an appeal to this decision was lodged with An Bord Pleanála in July 2020. An Bord Pleanála refused permission for this proposal in December 2020 (ABP Ref: PL06F.307641) based on the view that the proposed development would not give rise to an increased risk of flooding on the site or property in the vicinity.

Irish Water received planning permission from An Bord Pleanála for the Greater Dublin Drainage (GDD) Project in north Dublin in November 2019. The project will include the installation of an underground pipeline from Blanchardstown to a new wastewater treatment plant at Clonshaugh. The treated effluent will then be returned safely to the Irish Sea via a 6km marine outfall pipeline from Baldoyle to a point 1km north of Ireland's Eye. The An Bord Pleanála Inspector's Report states that the Inspector was satisfied that the mitigation measures for Baldoyle Bay SPA would not result in significant residual impacts and that the proposed development, individually or in combination with other plans or projects, would not adversely affect the integrity of any European sites. However, An Bord Pleanála's

[22] Fingal County Council's Online Planning Application Map Viewer. Available at: https://fingalcoco.maps.arcgis.com/apps/webappviewer/index.html?id=3fa7d9df584c4d93aab202638db9dd1a [Accessed 19/02/2021]

decision to grant permission for this project was quashed by the High Court in November 2020 due to a failure to seek observations from the Environmental Protection Agency on likely impacts of the proposed development on wastewater discharges.

Finally, the Baldoyle – Stapolin Local Area Plan (Fingal County Council, 2013a), outlines a phased approach for residential development within the LAP boundary. Phases 1 and 2 have been granted permission (Reg. Ref: F02A/0921 and F03A/ 1162 respectively) and at the publication of the Baldoyle – Stapolin LAP, Phase 1 had been completed while Phase 2 had been granted an extension of duration until August 2014. Phase 3 (Growth Area 3) comprises an area to the immediate west of the proposed park development. The third phase will provide for the completion of the village centre through the delivery of the northern half of the village centre site and the remainder of the residential units will then be built out, thereby completing the site. A clear phasing strategy is outlined in the LAP and the Natura Impact Statement (NIS) prepared in support of the Baldoyle -Stapolin LAP concluded that following the successful implementation of the policies and objectives of the Plan, there would be no likely significant effects on European sites, in isolation or in combination with other plans and projects. Therefore, significant cumulative impacts, as a result of the Phase 3 lands being developed in tandem with the proposed park development, can be excluded.

9. MONITORING

The following monitoring is proposed to assess the effectiveness of proposed mitigation and enhancement measures:

- **MON01:** A series of breeding bird surveys will be carried out for a period of 3 years, post-construction, to assess the parks impact on local breeding birds. Surveys will take place within the breeding bird season (March-June inclusive) and will comprise walked transects. Three visits to the park to carry out breeding bird surveys will be undertaken annually during the breeding bird season. An annual report summarising the findings and noting any year on year trends will be provided to the competent authority and developer.
- **MON02:** A series of wintering bird surveys will be carried out for a period of 3 years, post-construction, to monitor the use of the park by migratory birds (e.g. light-belled brent goose) during the wintering bird season. An annual report summarising the findings and noting any year on year trends will be provided to the competent authority and developer.
- **MON03:** The effects of the flap valve management programme (Roughan & O'Donovan, 2018), which was considered during the preparation of the overall Masterplan Design Report (BSLA, 2021) for the proposed park development, on the saltmarsh vegetation will be monitored to assess its impacts, so that the programme can be refined, if needed.

10. CONCLUSION

It can be concluded that overall the proposed park development is likely to result in a positive impact on local biodiversity, owing to the significant enhancement measures and habitat creation goals included in the overall Masterplan Design Report (BSLA, 2021). Notwithstanding that, potential significant effects have been identified for certain habitats and species on site. Measures have been provided to reduce the potential impacts on KERs, and to ensure compliance with national and European wildlife law. Monitoring has been prescribed to assess the effectiveness of enhancement measures proposed, to allow revisions where necessary.

11. REFERENCES

Atkins McCarthy (2000). *Baldoyle Action Plan: Ecology Assessment*. Unpublished report for Ballymore Properties Limited.

Bat Conservation Ireland (2010). *Bats & Lighting - Guidance Notes for Planners, Engineers, Architects and Developers*

Bat Conservation Trust UK (2008). *Bats and Lighting in the UK – Bats and the Built Environment Series*

Benson, L. (2009). *Use of Inland feeding sites by Light-bellied Brent Geese in Dublin 2008-2009: a new conservation concern?* Irish Birds (**8**) pgs 563-570

BSBI (2007). *BSBI's List of Accepted Plant Names.* Revised in 2007. Available online from the BSBI website www.bsbi.org/resources (Downloaded 18/12/2017).

BSLA (2021). *Racecourse Park Masterplan Deign Report.* March 2021

CIEEM (2018) *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine*. Chartered Institute of Ecology and Environmental Management.

Colhoun, K. & Cummins, S. (2013) *Birds of Conservation Concern in Ireland 2014 -2019*. Irish Birds 9: 523-544.

Collins, J. (ed.) (2016) *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn).* The Bat Conservation Trust, London. ISBN-13 978-1-872745-96-1

Crowe, O. & Holt, C. (2013). *Estimates of waterbird numbers wintering in Ireland, 2006/07 - 2010/11***.** Irish Birds 9. pgs:545-552

Denyer Ecology (2019). *Baldoyle Rare Plant Survey 2019.* Report for Fingal County Council.

Doogue, D., Nash, D., Parnell, J., Reynolds, S. & Wyse-Jackson, P. (1998) *Flora of County Dublin*. The Dublin Naturalists' Field Club.

Doogue, D. (1991). *Threatened Plant Survey Form: Puccinellia fasciculata*. Unpublished species report for Fingal County Council.

Dublin Bat Group (2018). *Dublin Bat Group 2018 Surveys for Fingal County Council: Baldoyle Racecourse.*

Fingal County Council (2017). *Fingal Development Plan 2017-2023*.

Fingal County Council (2010). *Fingal Biodiversity Action Plan 2010-2015*

Fitzgerald, A. (2017). *Vegetation Study of Baldoyle Racecourse Park, Co. Dublin*. Report for Fingal County Council.

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

Goodwillie, R. (2002). *Flora and Fauna Report: Baldoyle/Coast Road EIS*. Unpublished report for Ballymore Properties Limited.

Institute of Lighting Professionals (2020). *Guidance Notes for the Reduction of Obtrusive Light GN01.* Available online at https://theilp.org.uk/publication/guidance-note-1-for-the-reduction-of-obtrusive-light-2020/ . Accessed October 2020.

Keeley, B. (2016). *A bat assessment of the Racecourse Park and an evaluation of the potential for impacts from a public coastal route*. Report for Fingal County Council.

King, J.L., Marnell, F., Kingston, N., Rosell, R., Boylan, P., Caffrey, J.M., FitzPatrick, Ú., Gargan, P.G., Kelly, F.L., O'Grady, M.F., Poole, R., Roche, W.K. & Cassidy, D. (2011) *Ireland Red List No. 5:*

Amphibians, Reptiles & Freshwater Fish. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.

Lewanski, D., Voigt, C.C. (2016). Transition from conventional to light-emitting diode street lighting changes activity of urban bats. Journal of Applied Ecology.

Lewis, L. J., Burke, B., Fitzgerald, N., Tierney, T. D. & Kelly, S. (2019). *Irish Wetland Bird Survey: Waterbird Status and Distribution 2009/10-2015/16.* Irish Wildlife Manuals, No. 106. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht, Ireland.

Lockhart, N., Hodgetts, N. & Holyoak, D. (2012) *Ireland Red List No.8: Bryophytes.* National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland

Marnell, F., Looney, D. & Lawton, C. (2019). *Ireland Red List No. 12: Terrestrial Mammals*. National Parks and Wildlife Service, Department of the Culture, Heritage and the Gaeltacht, Dublin, Ireland.

Nairn, R., Fox, J. (2017). *Winter bird study of lands around Baldoyle Bay 2016-2017*. Report to Fingal County Council from Natura Environmental Consultants. Wicklow.

NPWS (2012). *Baldoyle Bay Special Protection Area (Site Code 4016) Conservation Objectives Supporting Document Version 1* December 2012

NRA (2009). *Guidelines for Assessment of Ecological Impacts of National Road Schemes.* National Roads Authority (Now part of Transport Infrastructure Ireland), Dublin.

NRA (2006). *Guidelines for the Treatment of Badgers during the Construction of National Road Schemes.* National Roads Authority.

NRA (2008). *Guidelines for the Treatment of Otters Prior to the Construction of National Road Schemes*. National Roads Authority

Pierce, S., Dillon D. (2012). *Winter bird survey of the lands surrounding the Baldoyle Estuary*. Unpublished report to Fingal County Council. Birdwatch Ireland. Fingal Branch.

Pierce, S. (2018). *The breeding birds of Racecourse Park, Baldoyle, Co. Dublin, April-June 2018*. Report for Fingal County Council.

Pierce, S. (2019). *The Breeding Birds of Racecourse Park, Baldoyle, Co. Dublin. April- June 2019.* Report for Fingal County Council.

Roughan & O'Donovan (2018). Flap valve management programme for the re-establishment of brackish habitats and fish in the Mayne River, Baldoyle, Co. Dublin. Report for Fingal County Council.

Scott Cawley Ltd. (2017). *Natura Impact Statement for Proposed Residential Development at St. Paul's College, Sybill Hill, Raheny, Dublin 5*

Wyse Jackson, M., FitzPatrick, Ú., Cole, E., Jebb, M., McFerran, D., Sheehy Skeffington, M. & Wright, M. (2016) *Ireland Red List No. 10: Vascular Plants.* National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs, Dublin, Ireland.

APPENDIX 1: EXAMPLES OF ECOLOGICAL EVALUATION

Ecological Valuation Criteria

International Importance:
• 'European Site' including Special Area of Conservation (SAC), Site of Community Importance (SCI), Special Protection Area (SPA) or proposed Special Area of Conservation.
• Proposed Special Protection Area (pSPA).
• Site that fulfils the criteria for designation as a 'European Site' (see Annex III of the Habitats Directive, as amended).
• Features essential to maintaining the coherence of the Natura 2000 Network.[23]
• Site containing 'best examples' of the habitat types listed in Annex I of the Habitats Directive.
• Resident or regularly occurring populations (assessed to be important at the national level)[24] of the following:
  ○ Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; and / or
  ○ Species of animal and plants listed in Annex II and/or IV of the Habitats Directive.
• Ramsar Site (Convention on Wetlands of International Importance Especially Waterfowl Habitat 1971).
• World Heritage Site (Convention for the Protection of World Cultural & Natural Heritage, 1972).
• Biosphere Reserve (UNESCO Man & The Biosphere Programme).
• Site hosting significant species populations under the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals, 1979).
• Site hosting significant populations under the Berne Convention (Convention on the Conservation of European Wildlife and Natural Habitats, 1979).
• Biogenetic Reserve under the Council of Europe.
• European Diploma Site under the Council of Europe.
• Salmonid water designated pursuant to the European Communities (Quality of Salmonid Waters) Regulations, 1988, (S.I. No. 293 of 1988).[25]

[23] See Articles 3 and 10 of the Habitats Directive.

[24] It is suggested that, in general, 1% of the national population of such species qualifies as an internationally important population. However, a smaller population may qualify as internationally important where the population forms a critical part of a wider population or the species is at a critical phase of its life cycle.

[25] Note that such waters are designated based on these waters' capabilities of supporting salmon (*Salmo salar*), trout (*Salmo trutta*), char (*Salvelinus*) and whitefish (*Coregonus*).

Ecological Valuation Criteria

National Importance:
• Site designated or proposed as a Natural Heritage Area (NHA).
• Statutory Nature Reserve.
• Refuge for Fauna and Flora protected under the Wildlife Acts.
• National Park.
• Undesignated site fulfilling the criteria for designation as a Natural Heritage Area (NHA); Statutory Nature Reserve; Refuge for Fauna and Flora protected under the Wildlife Act; and/or a National Park.
• Resident or regularly occurring populations (assessed to be important at the national level)[26] of the following:
  ○ Species protected under the Wildlife Acts; and/or
  ○ Species listed on the relevant Red Data list.
• Site containing 'viable areas'[27] of the habitat types listed in Annex I of the Habitats Directive.

County Importance:
• Area of Special Amenity.[28]
• Area subject to a Tree Preservation Order.
• Area of High Amenity, or equivalent, designated under the County Development Plan.
• Resident or regularly occurring populations (assessed to be important at the County level)[29] of the following:
  ○ Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;
  ○ Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;
  ○ Species protected under the Wildlife Acts; and/or
  ○ Species listed on the relevant Red Data list.
• Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National importance.
• County important populations of species, or viable areas of semi-natural habitats or natural heritage features identified in the National or Local Biodiversity Action Plan (BAP) if this has been prepared.
• Sites containing semi-natural habitat types with high biodiversity in a county context and a high degree of naturalness, or populations of species that are uncommon within the county.
• Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level.

[26] It is suggested that, in general, 1% of the national population of such species qualifies as a nationally important population. However, a smaller population may qualify as nationally important where the population forms a critical part of a wider population or the species is at a critical phase of its life cycle.

[27] A 'viable area' is defined as an area of a habitat that, given the particular characteristics of that habitat, was of a sufficient size and shape, such that its integrity (in terms of species composition, and ecological processes and function) would be maintained in the face of stochastic change (for example, as a result of climatic variation).

[28] It should be noted that whilst areas such as Areas of Special Amenity, areas subject to a Tree Preservation Order and Areas of High Amenity are often designated on the basis of their ecological value, they may also be designated for other reasons, such as their amenity or recreational value. Therefore, it should not be automatically assumed that such sites are of County importance from an ecological perspective.

29 It is suggested that, in general, 1% of the County population of such species qualifies as a County important

Ecological Valuation Criteria

Local Importance (higher value):
• Locally important populations of priority species or habitats or natural heritage features identified in the Local BAP, if this has been prepared;
• Resident or regularly occurring populations (assessed to be important at the Local level)[30] of the following:
  o Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;
  o Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;
  o Species protected under the Wildlife Acts; and/or
  o Species listed on the relevant Red Data list.
• Sites containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or populations of species that are uncommon in the locality;
• Sites or features containing common or lower value habitats, including naturalised species that are nevertheless essential in maintaining links and ecological corridors between features of higher ecological value.

Local Importance (lower value): • Sites containing small areas of semi-natural habitat that are of some local importance for wildlife; • Sites or features containing non-native species that are of some importance in maintaining habitat links.

population. However, a smaller population may qualify as County importance where the population forms a critical part of a wider population or the species is at a critical phase of its life cycle.

30 It is suggested that, in general, 1%of the local population of such species qualifies as a locally important population. However, a smaller population may qualify as locally important where the population forms a critical part of a wider population or the species is at a critical phase of its life cycle.

SCREENING REPORT & NATURA IMPACT STATEMENT -

INFORMATION FOR STAGE 1 SCREENING &

STAGE 2 APPROPRIATE ASSESSMENTS

FOR A PROPOSED PARK DEVELOPMENT PROJECT AT

RACECOURSE PARK,

BALDOYLE, DUBLIN 13

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This report has been prepared by Scott Cawley Ltd. in accordance with the particular instructions and requirements of our agreement with the Client, the project's budgetary and time constraints and in line with best industry standards. The methodology adopted and the sources of information used by Scott Cawley Ltd. in providing its services are outlined in this report. The scope of this report and the services are defined by these circumstances.

Where the conclusions and recommendations contained within this document are based upon information provided by others than Scott Cawley Ltd., no liability is accepted on the validity or accuracy of that information. It is assumed that all relevant information has been provided by those parties from whom it has been requested and that the information is true and accurate. No independent verification of any documentation or information supplied by others has been made.

The conclusions presented in this report represent Scott Cawley Ltd.'s best professional judgement based on review of site conditions observed during the site visit (if applicable) and the relevant information available at the time of writing. Scott Cawley Ltd. has used reasonable skill, care and diligence in compiling this report and no warranty is provided as to the report's accuracy.

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1 INTRODUCTION

1.1 Background and Legislative Context

This report, which contains information required for the competent authority (in this instance An Bord Pleanála) to undertake both Stage 1 Screening for Appropriate Assessment and Stage 2 Appropriate Assessment (AA) in respect of the proposed park development project at Racecourse Park, Baldoyle, Dublin 13 was prepared by Scott Cawley Ltd. on behalf of the applicant (Fingal County Council). The report provides information and appraises the potential for the proposed development of a public park at Baldoyle Racecourse Park to have significant effects, either individually or in combination with other plans or projects, on the integrity of any Natura 2000 sites (hereafter "*European sites*"[1]) and furthermore assesses whether the proposed development would adversely affect the integrity of any European site. The information in this report forms part of, and should be read in conjunction with, the documentation accompanying the application for permission for the proposed development.

Article 6(3) of *Council Directive 92/43/EEC of 21 May 1992 on the Conservation of Natural Habitats and of Wild Fauna and Flora* (as amended) (hereafter "*the Habitats Directive*") requires that, any plan or project not directly connected with or necessary to the management of a European site, but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to AA of its implications for the site in view of the site's conservation objectives. For the purposes of the application for permission in respect of the proposed park development project at Racecourse Park, the requirements of Article 6(3) have been transposed into Irish law by Part XAB of the Planning and Development Act 2000, as inserted.

The possibility of there being a significant effect on a European site will generate the need for a Stage 2 AA to be carried out by the competent authority for the purposes of Article 6(3). Accordingly, a Stage 1 Screening for AA in respect of an application for consent for proposed development must be carried out by the competent authority (in this case, An Bord Pleanála) in order to assess, in view of best scientific knowledge, if the proposed development, individually or in combination with another plan or project is likely to have a significant effect on any European site. A Stage 2 AA is required if it cannot be excluded, on the basis of objective information, that a proposed development, individually or in combination with other plans or projects, will have a significant effect on a European site. The screening stage operates merely to determine whether a full AA must be undertaken on the implications of the plan or project for the conservation objectives of relevant European sites.

This document comprises information to enable the competent authority to perform both Stage 1 screening for Appropriate Assessment and Stage 2 full Appropriate Assessment if required. The information in relation to the Stage 1 Screening Stage is presented in Section 4 of this document. Whereas information to enable the competent authority to perform its statutory function to conduct

[1] Natura 2000 sites are defined under the Habitats Directive (Article 3) as a European ecological network of special areas of conservation composed of sites hosting the natural habitat types listed in Annex I and habitats of the species listed in Annex II. 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* – as defined under the Planning and Development Act s and/or 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 candidate Special Areas of Conservation (cSACs) and Special Protection Areas (SPAs).

a full Appropriate Assessment, if required, is presented in Sections 5, 6 and 7 (which sections comprise the NIS).

It is the considered view of the authors of this report (Scott Cawley Ltd.) that, following the implementation of the mitigation measures prescribed in Section 6 (the effectiveness of which is also set out in Section 6), the proposed development will not, by itself or in combination with other plans or projects, have an adverse effect on the integrity of any European sites in view of their conservation objectives and there is no reasonable scientific doubt as to that conclusion.

1.2 Guidance and Approach

This document has been prepared having regard to the following documents.

1.2.1 European Commission Guidance

- *Assessment of Plans and Projects Significantly Affecting Natura 2000 sites: Methodological Guidance on the Provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC* (European Commission Environment Directorate-General 2001)
- *Managing Natura 2000 Sites: The Provisions of Article 6 of the Habitat's Directive 92/43/EEC* (European Commission 2000 and updated draft April 2015)
- *Guidance Document on Article 6(4) of the Habitats Directive 92/43/EEC. Clarification of the Concepts of Alternative Solutions, Imperative Reasons of Overriding Public Interest, Compensatory Measures, Overall Coherence.* Opinion of the European Commission (European Commission January 2007, updated 2012)
- *Communication from the Commission on the precautionary principle* (European Commission 2000)
- *Nature and Biodiversity Cases – Ruling of the European Court of Justice* (European Commission 2006)
- *Article 6 of the Habitats Directive – Rulings of the European Court of Justice* (European Commission Final Draft September 2014)

1.2.2 Irish Guidance

- *Applications for Approval for Local Authority Developments made to An Bord Pleanála under 177AE of the Planning and Development Act, 2000, as amended (Appropriate Assessment) – Guidelines for Local Authorities* (An Bord Pleanála 2013)
- *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

1.2.3 UK Guidance

- *Assessment of Implications (of Highways and/or Roads Projects) on European sites (including Appropriate Assessment) – HD44/09* (Design Manual for Roads and Bridges, UK Highways Agency February 2009)

- *Habitat Regulations Assessment Advice Note 10: Habitats Regulations Assessment relevant to nationally significant infrastructure projects Version 8* (The Planning Inspectorate, November 2017)

1.2.4 Other International Guidance

- *Methodological Guideline for Impact Assessment of Transportation Infrastructure Significantly Affecting Natura 2000 Sites – Guidance on the provisions of Article 6(3, 4) of the Habitats Directive* (Federal Ministry of Transport, Building and Housing of the Federal Republic of Germany 2004)

In addition, regard has been had to the following guidance in characterising impacts, including determining magnitude and significance of impacts, as relevant in the application to Appropriate Assessment and European sites:

- *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine* (Chartered Institute of Ecology and Environmental Management, 2018)
- *Environmental Guidelines Series for Planning and Construction of National Roads* (National Roads Authority, 2005-2009)

2 DESCRIPTION OF PROPOSED DEVELOPMENT

2.1 Overview

Full details of the proposed development can be found in the accompanying documentation for this planning application. Please see DN1815-101 and associated drawings for further details.

The proposed park development will be located on lands between Baldoyle and Portmarnock, namely the area between Grange Road and Station Road, segmented by the Moyne Road.

The proposed park development project falls under an overall masterplan for the Racecourse Park area in Baldoyle. The masterplan seeks to propose a coherent approach to the development of the future park by the integration of the SACs and the Coastal Greenway to the East of the site. The Masterplan Design Report, prepared by BSLA, outlines the overall concept behind the park development proposal, including a number of measures to enhance the biodiversity of the Racecourse Park lands (BSLA, 2021).

Taking a lead from the Baldoyle-Stapolin LAP and in particular Figure 4A.0 Green Infrastructure Context the design seeks to ensure that the natural, cultural, and health requirements of communities are integrated into, and not compromised by, new development.

The LAP utilises green infrastructure as a means of developing a strategy in relation to the following key areas: the conservation and enhancement of biodiversity; the provision of accessible parks, open spaces and recreational facilities; the sustainable management of water and the maintenance of sensitive landscapes.

Baldoyle-Stapolin and the surrounding areas have a natural environment which incorporates both nationally and internationally important sites in terms of wildlife and habitats.

The proposed design seeks to create a connection between Seagrange Park to the South the amenity areas presently between Admiral Park and Castlerosse View, extending north across Red Arches

Road into the open space east of The Coast development. The park extends further north across Moyne Road, ending at the boundary with Station Road roundabout.

The southern part of the development has a higher density of amenities as it houses facilities such as the community centre with associated play areas for lower age groups, existing pitches, a bowling green and a MUGA, alongside a network of cycle and pedestrian paths.

Furthermore, the masterplan also accommodates a skate park/teenage play area and a dog park in carefully chosen locations away from ecologically sensitive areas and a new string of attenuation ponds increasing the ecological value in some areas alongside the provision of a viewing platform overlapping the ponds and taking advantage of sight lines.

A recorded monument lies on the northern area of the site which the proposal seeks to pay homage to by tracing of its original footprint.

This area is also connected to the remainder of the site by the extension of the cycle and pedestrian network found throughout. This area also houses an existing bird feeding and nature development area which the proposal seeks to leave untouched.

The following works are to be undertaken as part of the current application:

- 4.5km of new walking and cycling routes including a bridge over the Mayne river and the repair to the railway underpass;
- A new 6358m^2 car park catering for 96 spaces;
- Upgrading and expanding the existing playground;
- A new 2234m^2 Skate park and Teenage Adventure Playground;
- Two new 18m x 40m astroturf Multi use games areas;
- A new 11906m^2 dog run;
- Tracing of circular archaeological feature through soft landscaping and removal of existing fence;
- New entrance wall to coastal greenway northern entrance;
- Development of 4 grass football pitches;
- Development of a 1224m^2 Bowls green;
- Creation of 3no. attenuation ponds;
- Extension of existing reedbed south of Mayne river and creation of new brackish grassland north of Mayne river;
- Provision of Public lighting along key walking and cycling routes; and;
- All landscaping works in the park.

It is also proposed to create a wetland boardwalk/ viewing platform, looking out over the proposed attenuation ponds to the west of the River Snugborough. At the confluence of the River Mayne and River Snugborough it is proposed to pull back the existing outfall pipe and regrade the area locally to allow for the establishment of marsh planting/ reed beds.

The proposed park will be developed in particular phases, commencing in 2022, as outlined below:

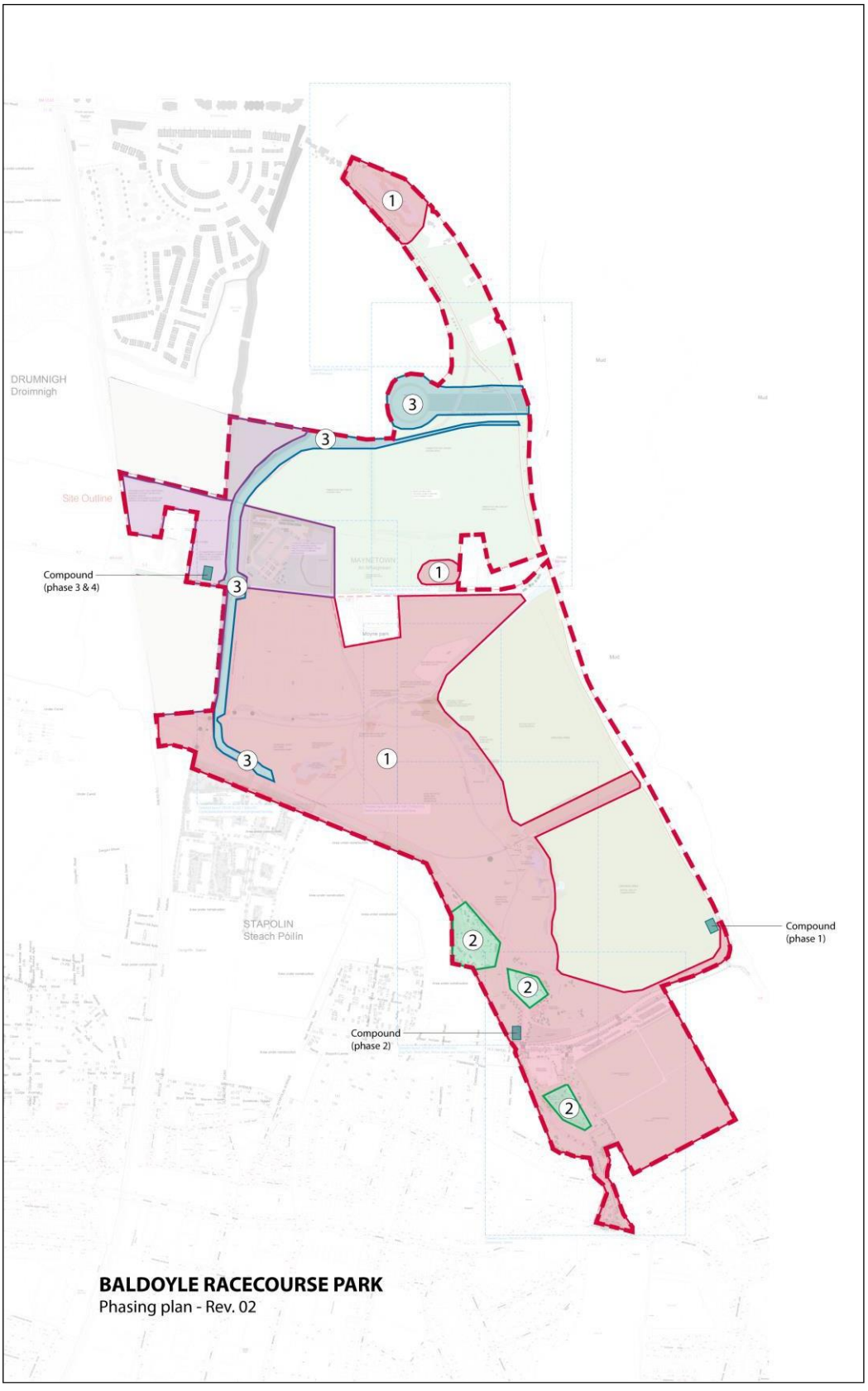
- Phase 1 (8 months): Infrastructure such as the main car park, located to the north of Red Arches playing pitches, the walking/ cycling routes south of the Moyne Road, and the sports pitches north of the River Mayne, will be provided at this stage. The first phase will also

comprise any regrading and excavations which seek to introduce a new aspect of ecology to the site (e.g. planting, ponds, regrading works etc.), as well as any improvements to the northern part of the existing Greenway entrance.

- Phase 2 (10 months): The second phase will include the provision of the proposed playgrounds, skate park and dog run.
- Phase 3 (4 months): The third phase will include the provision of a further pedestrian/ cyclist link running from the new greenway near the railway arch at Clongriffin, over the River Mayne, Moyne Road and around the paddock to link with the existing coastal greenway.

The location of construction compounds will be determined per phase of the proposed development. During Phase 1 the construction compound will be located to the north of Red Arches Road, at the junction with the Coast Road. The compound location for Phase 2 will be located just north of Red Arches Road, on an area of existing amenity grassland. Finally, during Phase 3 the construction compound will be located to the north of the Moyne Road, in an existing agricultural field. Figure 1 shows the proposed locations of construction compounds throughout the proposed development site.

Figure 1: Proposed Phasing and Locations of Construction Compounds at the Proposed Development Site (Source: Baldoyle Racecourse Park- Landscape Design Report (BSLA, 2020)).



The proposed park development project also includes a number of proposals which aim to protect and enhance existing biodiversity within the boundary of the proposed park development project. Such proposals are described below:

- Works within Baldoyle Bay SAC:
    - Creation of new brackish grassland area to the north of the River Mayne, through regrading of existing levels to allow brackish floodwaters to influence conditions, and possibly encourage the establishment of rare plant species, which previously occurred within the site (e.g. Borrer's saltmarsh grass). Please refer to Drawing C502, provided by CORA Consulting Engineers, and submitted with this planning application, for a visual representation of the regrading works proposed here; and;
    - Provision of controlled access to the River Mayne for livestock to reduce bank erosion.
- Works to the south of the Moyne Road:
    - Redesign of shape of existing SUDs pond, granted under Reg. Ref: F16A/0412, to merge more naturally with landscape and proposed wetland planting around the perimeter of this pond;
    - Removal of c. 25m of the existing outfall pipe of 1.3m internal diameter, and recontouring of surrounding lands, using the existing contours as a guide ,such that a greater area will be below 1.5m Ordnance Datum (OD) contour, which may encourage the expansion of reed bed habitat along River Snugborough. Please refer to Drawing C501, provided by CORA Consulting Engineers, and submitted with this planning application, for a visual representation of the proposed here; and;
    - Creation of a new string of attenuation ponds to the west of the River Snugborough to increase the ecological value of this area.

Landscaping planting lists have been designed in collaboration with the project ecologist. The following species are proposed for riverbank stabilisation; Goat Willow *Salix caprea*, Grey Willow *Salix cinerea,* Alder *Alnus glutinosa*, Silver Birch *Betula pendula* and Downy Birch *Betula pubescens*. Proposed wetland habitat planting will include species of native rushes, sedges and grasses, along with herbaceous species such as Water Mint *Mentha aquatica*, Meadowsweet *Filipendula ulmaria*, Flag Iris *Iris pseudacorus* and Cuckoo-flower *Cardamine pratensis*. Wildflower meadow planting is proposed in swathes within the open areas west of the proposed wetlands/ viewpoint and species here will include Devils Bit Scabious *Succisa pratensis*, Oxeye Daisy *Leucanthemum vulgare*, Purple Loosestrife *Lythrum salicaria*, Ragged Robin *Lychnis flos-cuculi*, Meadow Buttercup *Ranunculus acris* and Marsh Marigold *Caltha palustris*. Woodland whip planting will include, but is not limited to, the following species; Silver Birch, Hazel *Corylus avellana*, Downy Birch and Hawthorn *Crataegus monogyna*. For full planting lists please refer to information provided by the Landscape Architects (BSLA).

In terms of proposed lighting, the main pathways/ cycle tracks through the proposed park will be lit using 6m high LED luminaires, while the proposed car park, will be lit using 8m high LED luminaires. The lighting design aims to illuminate the pathways and car park only, will lighting being highly directional and reducing to levels close to background (i.e. 0.75 lux) within a few metres of the illuminated surfaces.

Lands to the north of the Moyne Road, located within the boundary of the proposed park, are currently being successfully managed for foraging Light-bellied Brent Geese. The management of these lands for geese is not part of this application, but rather is part of an ongoing management regime undertaken by Fingal County Council. This management concept was included as mitigation in the Portmarnock South Local Area Plan (LAP) to mitigate against the loss of suitable foraging lands for geese in the eastern part of the Plan Area. These lands form part of the "ecological buffer zones" which were detailed in the preparation of both the Portmarnock South LAP and Baldoyle-Stapolin LAP. The intention is that these ecological buffer zones will function as integrated areas for the appropriate habitat protection measures for migratory waterfowl and wader bird species habitat. The Portmarnock South LAP states that "*these areas are to be laid out and managed in a way that provides suitable alternative habitat for bird species likely to be displaced by residential development within the plan lands*". The exact habitat protection measures to be employed in these lands were devised in consultation with the NPWS and Fingal County Council's Biodiversity and Parks Officers. One such measure was the establishment of a "quiet zone", in lands to the north of the Moyne Road to cater for Brent Geese and wader species. The Portmarnock South LAP states that "*the 'quiet zone' consists of grassland pasture and is enclosed by a fence and hedge to prevent disturbance during the winter migratory bird season. The enclosure must be dog proof but can permit overlooking of the 'quiet zone' ".* It is important to note that while these lands are included in the boundary of the proposed Baldoyle Racecourse Park, no works are proposed to these lands and it is intended that management of these lands for geese will continue.

3 METHODOLOGY

3.1 Authors' Qualifications & Expertise

This Natura Impact Statement (NIS) has been prepared by Caroline Kelly, reviewed by Niamh Burke and approved by Aebhin Cawley, both of Scott Cawley Ltd.

Caroline Kelly is a Senior Ecologist at Scott Cawley Ltd. with over 4 years' professional ecological consultancy experience in preparing ecological reports and assessments for inclusion in planning applications. She holds an honours degree in Environmental Biology, from University College Dublin (UCD), and a Masters in Ecological Assessment from University College Cork (UCC). Caroline has experience in habitat survey and assessment (including Annex I habitats and legally protected sites) in a range of terrestrial, freshwater and coastal environments. She is also experienced in surveys for protected species (e.g. bats, badger and otter), bird surveys (both breeding and overwintering) and surveys for invasive species. Whilst working at Scott Cawley Ltd. Caroline has managed ecological assessments for a wide range of projects including tourism, recreational, industrial, commercial, residential, transport and renewable energy developments.

Niamh Burke is the Principal Ecologist with Coiscéim Ecology. She holds a BSc in Natural Sciences with Environmental Science and a PhD in aquatic ecology and hydromorphology. She is a Chartered Environmentalist (CEnv) with the Society for the Environment (Soc Env), a Full Member of the CIEEM and member of the Irish Environmental Law Association (IELA). Niamh is a senior scientist with academic research and extensive consulting experience in terrestrial ecology, aquatic ecology and fluvial geomorphology. She is an experienced project manager with a full working knowledge of EIA, the planning process and relevant environmental legislation, both national and European. With a specialism

in aquatic habitats, she also has experience of terrestrial species' surveys and mitigation approaches. In her extensive consultancy roles, she has acted as reviewer for all ecological reporting and ensured consistency of standards and approach.

Aebhín Cawley is Director with Scott Cawley. She holds an honours degree in Zoology from Trinity College, Dublin and a postgraduate diploma in Physical Planning at Trinity. She is a Chartered Environmentalist (CEnv) with the Society for the Environment (Soc Env) and a Full Member of the CIEEM. Aebhin Cawley is an experienced ecological consultant with extensive experience in public and private sector projects including renewable energy, ports and other major infrastructural developments. Aebhín has been undertaking Ecological Impact and Appropriate Assessment work in Ireland since 2002 and has been influential in determining the direction in which EcIA and AA work is evolving in Ireland. She has delivered lectures and training on Appropriate Assessment to a range of organisations and professional institutes (including the Irish Planning Institute, the Royal Town Planning Institute, the Irish Environmental Law Association, National Roads Authority, Engineers Ireland, An Bord Pleanála and Eirgrid) and regularly provides Appropriate Assessment training to local authorities and other public sector organisations. She authored guidelines on Appropriate Assessment for the EPA and delivered training on its application to its inspectorate. Aebhin was responsible for checking and approval of this report and provided additional text where required.

3.2 Desktop Study

The information comprised in this report will assist the competent authority to conduct both the required Stage 1 Screening and Stage 2 Appropriate Assessments in respect of the proposed development and was based on a desktop study carried out in April 2019 and updated in January and November 2020. Information relied upon included the following information sources, which included maps, ecological and water quality data:

- Ordnance Survey of Ireland (OSI) mapping and aerial photography available from www.osi.ie;
- Online data available on European sites, including habitat and species GIS datasets, and conservation objectives (and supporting) documents, as held by the National Parks and Wildlife Service (NPWS) from www.npws.ie;
- Online protected species datasets held by the National Biodiversity Data Centre from http://maps.biodiversityireland.ie;
- Information on land-use zoning from the online mapping of the Department of the Environment, Community and Local Government http://www.myplan.ie/en/index.html;
- Information on water quality in the area available from www.epa.ie;
- Information on soils, geology and hydrogeology in the area available from www.gsi.ie;
- Information on environmental conditions of the site and environs from http://gis.epa.ie/Envision;
- Information on the location, nature and design of the proposed development supplied by the applicant's design team;
- Information on the status of EU protected habitats and species in Ireland (National Parks & Wildlife Service, 2019); and,

- Information on the Conservation Status of Birds in Ireland 2014 -2019 (Colhoun & Cummins, 2014).

The following planning and policy documents were relevant to the subject lands, in particular with regard to the assessment of other plans and projects with potential for cumulative effects:

- *National Biodiversity Plan 2017 – 2021* (DCHG, 2017);
- *River Basin Management Plan for Ireland 2018-2021* (DHPLG, 2017);
- *Fingal Development Plan 2017-2023* (Fingal County Council, 2017)*;* and,
- *Baldoyle- Stapolin Local Area Plan 2013 – 2019* (Fingal County Council, 2013).

3.3 Stage 1 Screening Methodology

The referenced guidance documents in Section 1.2 set out a staged process for carrying out the assessment required under the Habitats Directive, the first stage of which is referred to as screening. This screening stage identifies the likely significant impacts on a European site, if any, which would arise from a proposed development either alone or in combination with other plans and projects.

The possibility of there being a significant effect on a European site will generate the need for a Stage 2 AA to be carried out by the competent authority for the purposes of Article 6(3). In this instance, the competent authority is An Bord Pleanála. A screening for appropriate assessment of an application for consent for proposed development must be carried out by the competent authority to assess, in view of best scientific knowledge, if the proposed development, individually or in combination with another plan or project is likely to have a significant effect on any European site. A Stage 2 Appropriate Assessment is required if it cannot be excluded, on the basis of objective information, that the proposed development, individually or in combination with other plans or projects, will have a significant effect on a European site. The first (Screening) stage for appropriate assessment operates merely to determine whether a (Stage 2) Appropriate Assessment must be undertaken on the implications of the plan or project for the conservation objectives of relevant European sites.

Screening for AA involves the following:

- Determining whether a project or plan is directly connected with or necessary to the conservation management of any European sites[2];
- Describing the details of the project/plan proposals and other plans or projects that may cumulatively affect any European sites;
- Describing the characteristics of relevant European sites; and,
- Appraising likely significant effects of the proposed project on relevant European sites.

Section 5 of this report provides a summary of the information gathered for AA screening and Sections 6, 7 and 8 of this report take forward the assessment into full AA.

[2] In this instance the proposed development is not directly connected with or necessary to the conservation management of any European sites.

3.4 Stage 2 AA Methodology

For Stage 2 AA, the potential for a proposed development, individually or in combination with other plans or projects, to adversely affect the integrity of European sites must be examined with respect to the specific conservation objectives of the relevant European sites. This Stage 2 AA also requires consideration of the specific mitigation measures that will be implemented to ensure an absence of adverse effects on the integrity of European sites. Stage 2 AA must provide a clear conclusion regarding the absence (considering the implementation of mitigation measures) of adverse effects on the integrity of European sites. In order to grant permission, the competent authority must conclude, having conducted the Stage 2 AA that the proposed development will not have an adverse effect on the integrity of any identified European sites.

3.5 Assessment Methodology

The proposed development (including the proposed design, construction methodologies and operational effects) was analysed and assessed to identify the potential impacts associated with the proposed development that could affect the ecological environment. From this, the Zone of Influence (ZoI) of the proposed development was defined. Based on the identified impacts and their ZoI, the European sites potentially at risk of any direct or indirect impacts were identified. This assessment was undertaken in consideration of all potential impact sources and pathways connecting the proposed development to European sites, in view of the conservation objectives supporting the conservation condition of the sites' Qualifying Interests (QIs) or Special Conservation Interests (SCIs) species.

The conservation objectives relating to each European site and its QIs/SCIs are expressed generally for SACs as "*to maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the cSAC has been selected*", and for SPAs "*to maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA*".

Following on from this, and as defined in the Habitats Directive, favourable conservation status (or condition, at a site level) of a habitat is achieved when:

- *"its natural range, and area it covers within that range, are stable or increasing, and*
- *the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and*
- *the conservation status of its typical species is favourable"*

The favourable conservation status (or condition, at a site level) of a species is achieved when:

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

Where site-specific conservation objectives have been prepared for a given European site, these include a series of specific attributes and targets against which effects on conservation condition, or integrity, can be measured, *i.e.* an impact which affects the achievement of favourable conservation

condition, as measured by the attributes and targets, is an impact on site integrity. In the case of a European site where site-specific conservation objectives are not yet available, sample site specific attributes and targets for a given QI/SCI have been compiled, based on those from other relevant European sites, as a guide in assessing how conservation condition could potentially be affected by the proposed development.

In the case of some QIs/SCIs in certain European sites, the conservation objective is to restore rather than maintain conservation condition and this distinction is taken into account in the assessment; as is any legacy damage to European sites that has occurred since their designation, insofar as possible.

4 RECEIVING ENVIRONMENT

4.1 Overview of Proposed Development Site

The subject lands are located at Baldoyle Racecourse Park to the west of the Coast Road in Baldoyle, Dublin 13. The lands are centred on Irish Grid Reference O 23828 41064. The majority of the subject lands lie between Red Arches Road and the Moyne Road (R123), to the west of the Coast Road (R106). Agricultural fields to the north of the Moyne Road are also included within the site boundary, as are the playing pitches to the south of Red Arches Road. The existing derelict Marketing Suite and associated car park are located within the subject lands, just to the south of Red Arches road. The Dublin-Belfast railway line forms the north-west boundary of the site and the Coast Road runs to the east of the eastern boundary (see Figure 1 for full extent of the site).

Under the Fingal Development Plan 2017-2023, the subject lands fall under the following zoning objectives; "*HA-High Amenity*" and "*OS- Open Space*". The following objectives apply to these zonings; "*Protect and enhance high amenity areas*" and "*Preserve and provide for open space and recreational amenities*" (Fingal County Council, 2017) Surrounding lands largely comprise lands zoned for residential use.

4.2 Ecological Environment

Based on the results of habitat surveys carried out in spring 2019, the proposed development site currently comprises areas of grassland of various ecological interest, watercourses, scrub, hedgerows, disturbed ground, stonewalls, horticultural lands, artificial waterbodies (attenuation ponds), reedbeds, treelines, ornamental planting, upper saltmarsh, agricultural fields and playing pitches. For full details regarding the habitats contained within the boundary of the proposed development site please refer to the Ecological Impact Assessment report, prepared by Scott Cawley Ltd. (Scott Cawley, 2020).

Three invasive species, all of which are listed on the Third Schedule of the *Birds and Natural Habitats Regulations (2011)*, were recorded within the survey area: Giant Hogweed *Heracleum mantegazzianum*, Japanese Knotweed *Reynoutria japonica* and Three-cornered Leek *Allium triquetrum*. A single Giant Hogweed plant was recorded along the southern boundary of an area of amenity grassland to the north of Red Arches road. Stands of Japanese Knotweed were noted within the Moyne Park halting site and along the Moyne Road. Three-cornered Leek was recorded at the entrance to a field just south of the Moyne Road and this species was also present at the entrance to the allotments in Baldoyle Racecourse Park. Fitzgerald (2017) also recorded one Giant Hogweed plant in the area of grassland/ scrub to the west of the Snugborough Stream during 2017 surveys

(Fitzgerald, 2017). This area was not accessible during 2019 surveys due to the presence of livestock. Therefore, it cannot be confirmed whether this plant remains here.

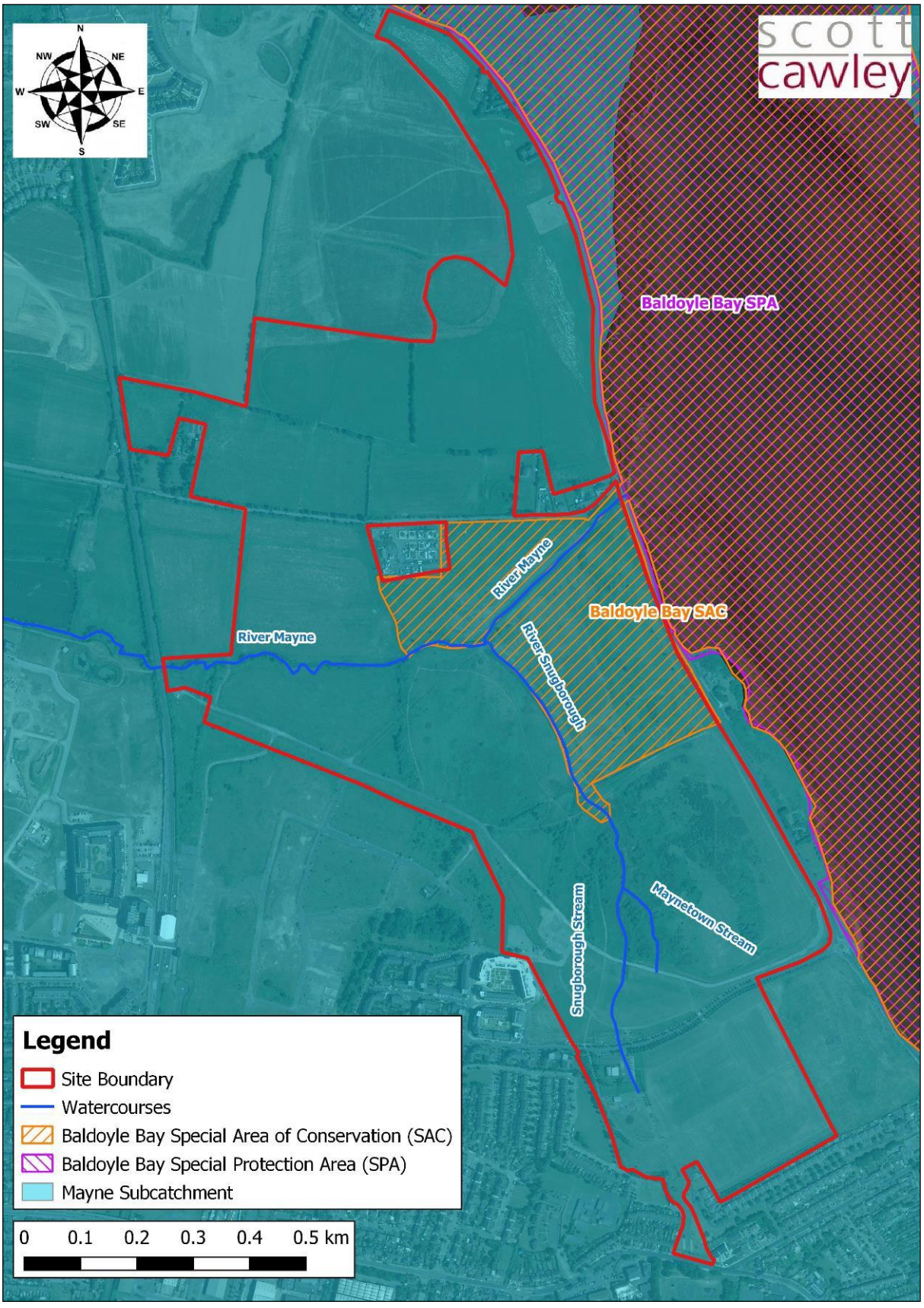
Figure 2: Proposed development in the context of its surroundings.

4.3 Hydrology and Water Catchments

According to the EPA's online map viewer[3], the subject lands fall entirely within the Liffey and Dublin Bay Water Framework Directive (WFD) catchment and the Mayne WFD sub-catchment. Three watercourses flow through the site; the Mayne River, Snugborough River and Maynetown River. The Snugborough River and Maynetown River are both tributaries to the River Mayne and their confluence occurs within the site boundary. The Mayne River flows in an easterly direction and discharges into Baldoyle Bay, flowing underneath the Coast Road to the east of the site. The location of the proposed development site in the context of the local surface water network and the nearest European site, Baldoyle Bay SAC, is illustrated in Figure 2. The most recent river water quality value (Q-value), as recorded by the EPA as part of a National Rivers Monitoring Programme as part of WFD, for the River Mayne is "*Poor*" (Q-value 2-3), as recorded in 2019 at the designated monitoring station (Hole-in-the-Wall Road Bridge) *c.* 1km upstream of the proposed development. The Snugborough River and Maynetown River are assessed as part of the Mayne_10 waterbody, and their WFD status is therefore given as "Poor". The River Mayne is "*At risk"* of not achieving its targets as set out in the Water Framework Directive.

[3] EPA Online Map Viewer Available at: https://gis.epa.ie/EPAMaps/[Accessed 03/11/2020]

Figure 3: Proposed development site in relation to the local surface water network and Baldoyle Bay SAC/ SPA.



4.4 Geology and Groundwater

The proposed development is within the "*Dublin*" groundwater body and is classified as "*Poorly productive bedrock*". The most recent WFD groundwater status for the site (2010-2015) is "*Good"* and the most recent WFD Risk Score is "*Not at risk"*. The level of vulnerability to groundwater contamination from human activities is deemed to range from "*High*" to "*Low*" moving westwards across the site[4]. The majority of the site is underlain by the bedrock of the "*Malahide Formation*" which is described as "*Agrillaceous bioclastic limestone, shale*" while the southern part of the site (Red Arches pitches) is underlain by the "*Tober Colleen Formation*", which is described as "*Calcareous shale, limestone conglomerate*". The bedrock of the area is described as a "*Locally Important Aquifer – Bedrock which is Moderately Productive only in Local Zones*", while that below the Red Arches pitches in the south of the site is described as a "*Poor Aquifer- Bedrock which is Generally Unproductive except for Local Zones*".

4.5 Records of Rare/ Protected Species

The following species records[5] (for which European sites listed in Table 1 have been designated) were obtained from the National Biodiversity Data Centre online map viewer on the 3rd November 2020, as part of a desktop review for the proposed development site:

- Harbour Porpoise (*Phocoena phocoena*) – recorded within 2km of the proposed development site off Sutton Creek (1973);
- Harbour Seal (*Phoca vitulina*)- recorded within 2km of the proposed development site off North Bull Island (2018);
- Grey Seal (*Halichoerus grypus*)- recorded within 2km of the proposed development site off North Bull Island (2012);
- Petalwort (*Petalophyllum ralfsii*)- historic record within 2km of the proposed development site on the North Bull Island (1874);
- Brent Goose (*Branta bernicla*)- recorded within 2km of the proposed development site at Seagrange park (2005);
- Shelduck (*Tadorna tadorna*) recorded within 2km of the proposed development site in Baldoyle Bay (2005);
- Ringed Plover (*Charadrius hiaticula*)- recorded within 2km of the proposed development site in Baldoyle Bay (2014);
- Golden Plover (*Pluvialis apricaria*)- recorded within 2km of the proposed development site in Baldoyle Bay (2005);
- Grey Plover (*Pluvialis squatarola*)- recorded within 2km of the proposed development site in Baldoyle Bay (2005);

[4] According to the Geological Survey Ireland (GSI) Groundwater Data Viewer: www.gsi.ie [Accessed 31/01/2020]

[5] According to NBDC online data www.biodiversity.ie [Accessed 3rd November 2020] This excludes NBDC records with a resolution greater than 1km^2.

- Bar-tailed Godwit (*Limosa lapponica*)- recorded within 2km of the proposed development site in Baldoyle Bay (2005);
- Cormorant (*Phalacrocorax carbo*)- recorded within 2km of the proposed development site in Baldoyle Bay (2005);
- Herring Gull (*Larus argentatus*)- recorded within 2km of the proposed development site in Seagrange Park (2005);
- Kittiwake (*Rissa tridactyla*)- recorded within 2km of the proposed development site in Baldoyle Bay (2005);
- Teal (*Anas crecca*)- recorded within 2km of the proposed development site in Seagrange Park (2005);
- Pintail (*Anas acuta*) - recorded within 2km of the proposed development site in Baldoyle Bay (2005);
- Shoveler (*Anas clypeata*)- recorded within 2km of the proposed development site in Baldoyle Bay (2005);
- Oystercatcher (*Haematopus ostralegus*)- recorded within 2km of the proposed development site in Seagrange Park (2005);
- Knot (*Calidris canutus*)- recorded within 2km of the proposed development site in Baldoyle Bay (2005);
- Sanderling (*Calidris alba*)- recorded within 2km of the proposed development site in Baldoyle Bay (2005);
- Dunlin (*Calidris alpina*)- recorded within 2km of the proposed development site in Baldoyle Bay (2005);
- Black-tailed Godwit (*Limosa limosa*)- recorded within 2km of the proposed development site in Seagrange Park (2005);
- Curlew (*Numenius arquata*) - recorded within 2km of the proposed development site in Baldoyle Estuary (2011);
- Redshank (*Tringa totanus*)- recorded within 2km of the proposed development site in Seagrange Park (2005);
- Turnstone (*Arenaria interpres*)- recorded within 2km of the proposed development site in Baldoyle Bay (2005);
- Black-headed Gull (*Larus ridibundus*)- recorded within 2km of the proposed development site in Seagrange Park (2005);
- Red-breasted Merganser (*Mergus serrator*)- recorded within 2km of the proposed development site in Baldoyle Bay (2005);
- Common Goldeneye (*Bucephala clangula*)- recorded within 2km of the proposed development site in Baldoyle Bay (2005);
- Great-crested Grebe (*Podiceps cristatus*)- recorded within 2km of the proposed development site in Baldoyle Bay (2005);

- Shag (*Phalacrocorax aristotelis*)- recorded within 2km of the proposed development site off Bull Island (2011);
- Lesser Black-backed Gull (*Larus fuscus*)- recorded within 2km of the proposed development site in Baldoyle Bay (2005);
- Common Tern (*Sterna hirundo*)- recorded within 2km of the proposed development site off Bull Island (2010); and;
- Roseate Tern (*Sterna dougallii*)- recorded within 2km of the proposed development site off Bull Island (2010).

5 PROVISION OF INFORMATION FOR SCREENING

5.1 Determining the Zone of Influence of the Proposed Development

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 QIs or SCIs), and a pathway between the source and the receptor (*e.g.* pathway by air for air borne 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 defined as the area within 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 (as defined in CIEEM, 2018).

The identification of a source-pathway-receptor risk 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 air borne pollution) and the characteristics of the receptor (*e.g.* the sensitivities of the European site and its QIs/SCIs). However, identification of the risk does mean that there is a possibility of ecological or environmental damage occurring, with the significance of the effect depending upon the nature and exposure to the risk and the characteristics of the receptor. In this case, where uncertainty existed, the precautionary principle was applied.

5.2 Identifying European Sites within the ZoI of the Proposed Development

European sites within the vicinity of the proposed development site are shown in Figure 3 below and are listed in Table 1 along with their qualifying interests and any relevant source-pathway-receptor links between the proposed development and European sites that could result in significant effects on these European sites.

Figure 4: European sites located within the vicinity of the proposed development site

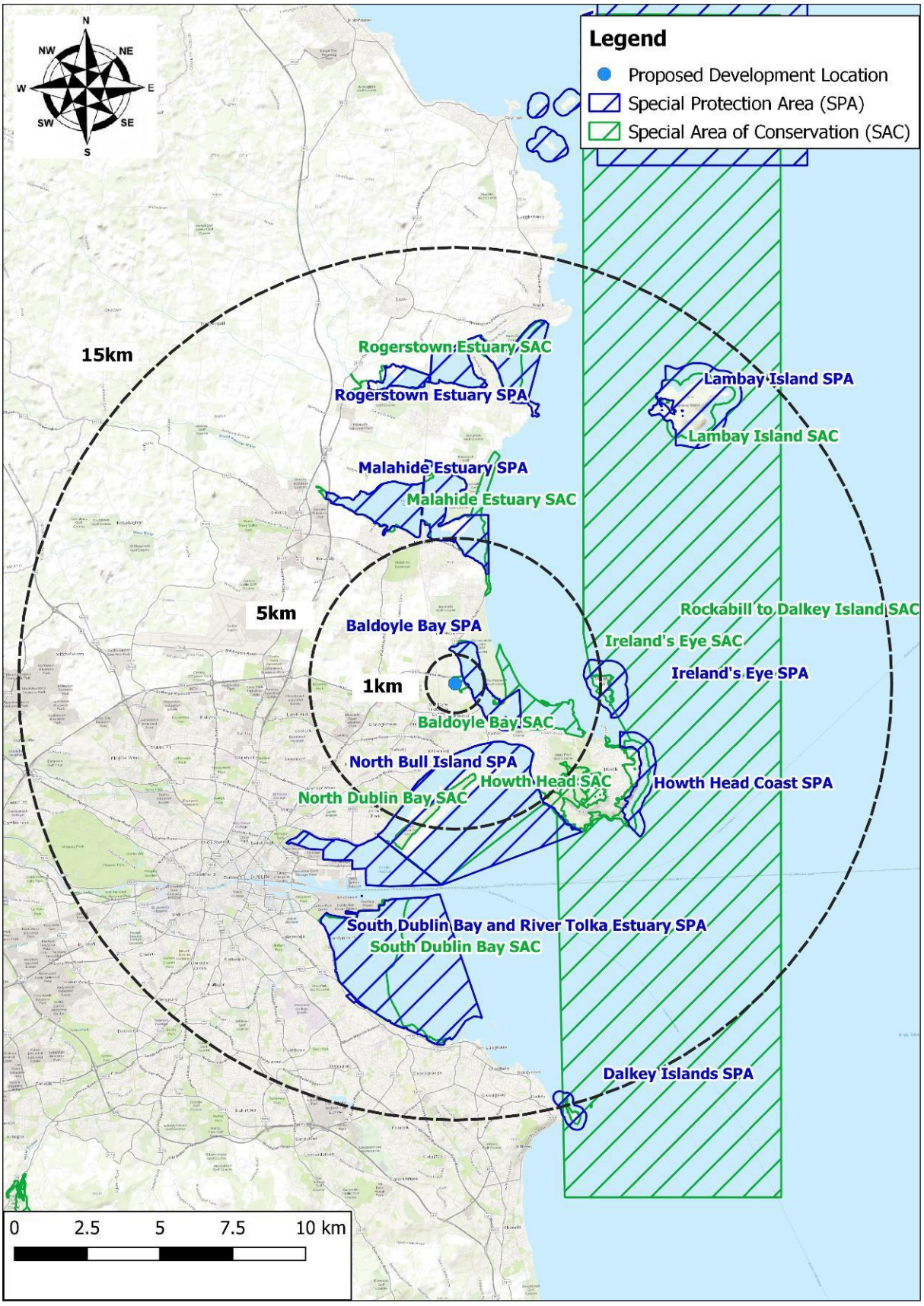


Table 1 European sites within the vicinity of the proposed development site

Table 1 European Sites within the vicinity of the Proposed Development (information downloaded from www.npws.ie)		
Site name and code	**Reasons for designation[6] (*= Priority Habitat)** **(Sourced from NPWS online Conservation Objectives)**	**Do any potential receptor-pathway-source links exist between the proposed development and the Natura 2000 site?** (European sites are "*Relevant*" where a relevant source-pathway-receptor link exists).
Special Areas of Conservation (SAC)		
Baldoyle Bay SAC [000199] Partially located within the proposed development boundary	**Conservation Objectives Version 1.0 (19/11/2012)** **Annex I Habitat:** - Mudflats and sandflats not covered by seawater at low tide [1140] - Salicornia and other annuals colonising mud and sand [1310] - Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] - Mediterranean salt meadows (Juncetalia maritimi) [1410]	Yes, there is a potential source-receptor pathway between the proposed development and the European site via the surface water network comprising of the River Mayne, River Snugborough, Maynetown Stream and Snugborough Stream which all flow though the proposed development site and discharge into the transitional waters of Baldoyle Estuary (Baldoyle Bay SAC). In addition to this source-receptor pathway, it must be acknowledged that part of the SAC is contained within the boundary of the proposed development. Therefore, there is potential for direct habitat loss of QI habitat as a result of the development of the site. The proposal includes regrading works within the boundary of the SAC, in an area of existing improved agricultural grassland to the north of the River Mayne. Regrading works here are proposed to allow for the natural expansion of brackish grassland habitat northwards. Works will require the removal of up to 1.5m topsoil within the SAC to create the levels required and ensure a gradual slope is achieved. Excavation beyond the area proposed for brackish grassland expansion will also be necessary to achieve the slopes/ banking required. *Surface Waters* Surface waters generated during construction could potentially carry silt (generated through earthworks on site), oils, or other chemicals from the

[6] "*Qualifying Interests*" for SACs and "*Special Conservation Interests*" for SPAs based on relevant Statutory Instruments for each SPA, and NPWS Conservation Objectives for SACs downloaded from www.npws.ie in September 2019.

Table 1 European Sites within the vicinity of the Proposed Development (information downloaded from www.npws.ie)		
Site name and code	**Reasons for designation[6] (*= Priority Habitat)** **(Sourced from NPWS online Conservation Objectives)**	**Do any potential receptor-pathway-source links exist between the proposed development and the Natura 2000 site?** (European sites are "*Relevant*" where a relevant source-pathway-receptor link exists).
		proposed development site, overland across the existing baseline conditions and/or via the numerous watercourses which flow through the proposed development site. In this way these harmful substances could be transferred downstream into the transitional waters of Baldoyle Bay SAC. Given the close proximity of the proposed development site to Baldoyle Bay SAC and the hydrological link which exists between them, significant effects on this SAC cannot be ruled out during the construction phase of the proposed development in view of the relevant conservation objectives. There is no potential for significant effects on this SAC during the operation of the proposed development as the majority of the park will not be composed of hardstanding and therefore surface water will dissipate to ground through infiltration. *Loss of Habitat* Due to the fact that the proposed development boundary overlaps with the boundary of this SAC, and considering that the proposal involves regrading works within the boundary of the SAC, it is possible that development of these lands could result in the disturbance or removal of habitat. According to the mapping contained in this SAC's supporting documents[7], two QI habitats exist within the boundary of the proposed development site- Atlantic salt meadows [1330] along the banks of the River Mayne, and Mediterranean salt meadows [1410] along the banks of the River Snugborough. No Annex I habitats were recorded during the habitat surveys undertaken and Article 17 habitat data,

[7] *Baldoyle Bay SAC (000199) Conservation Objectives Supporting Document- Coastal Habitats* (NPWS, 2012).

Table 1 European Sites within the vicinity of the Proposed Development (information downloaded from www.npws.ie)		
Site name and code	**Reasons for designation[6] (*= Priority Habitat)** **(Sourced from NPWS online Conservation Objectives)**	**Do any potential receptor-pathway-source links exist between the proposed development and the Natura 2000 site?** (European sites are "*Relevant*" where a relevant source-pathway-receptor link exists).
		downloaded from the NPWS website, indicates that Annex I saltmarsh habitats have previously been recorded to the south of the River Mayne and east of the River Snugborough[8] (please refer to Figure 5). Furthermore, data contained in the SAC's supporting documents indicates that land infilling, reclamation and inadequate grazing in recent years has had a detrimental effect on saltmarsh habitat success and longevity[7]. No works are proposed in areas previously identified as Annex I saltmarsh habitats. This, coupled with the fact that surveys conducted by Scott Cawley did not identify any Annex I habitats, means that there is no potential for the proposed development to result in the removal of QI Annex I habitats within Baldoyle Bay SAC. In fact, the proposed regrading works would in fact result in a positive effect on saltmarsh habitats in this area, with the aim of increasing their extent. *Invasive Species* There is potential for the spread of invasive species during the construction of the proposed park development due to the fact that three invasive species have been recorded on site. However, it should be noted that areas of Japanese Knotweed and Giant Hogweed identified during surveys on site are currently being eradicated through a control programme implemented by Fingal County Council. Nevertheless, the proposed works have the potential to cause the spread of Three-corned Leek to downstream European sites, including Baldoyle Bay SAC, in the absence of mitigation.

[8] Article 17 habitat data for Atlantic Salt Meadows [1410] and Mediterranean Salt Meadows [1330], downloaded from the following NPWS webpage: https://www.npws.ie/maps-and-data/habitat-and-species-data/article-17/2019/habitats/coastal-habitats [Accessed 11/02/2021]. Please refer to Figure 5 for visual representation of this data.

Table 1 European Sites within the vicinity of the Proposed Development (information downloaded from www.npws.ie)		
Site name and code	**Reasons for designation[6] (*= Priority Habitat)** **(Sourced from NPWS online Conservation Objectives)**	**Do any potential receptor-pathway-source links exist between the proposed development and the Natura 2000 site?** (European sites are "*Relevant*" where a relevant source-pathway-receptor link exists).
		In addition, there is potential for escape of non-native invasive plant materials, seeds or seedlings during operation of the proposed development from new planting introduced through proposed landscaping, into the receiving downstream water environment. However, there is no possibility of significant effects as no invasive plant species (*i.e.* those species listed on Schedule 3 of the *Birds and Habitats Regulations*, 2011) will be planted or imported to the proposed site.
Ireland's Eye SAC [002193] *c.* 4.3km east	**Conservation Objectives Version 1.0 (27/01/2017)** **Annex I Habitats:** - Perennial vegetation of stony banks [1220] - Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	Yes, there is a potential source-receptor pathway between the proposed development and the European site via the surface water network due to the fact that this SAC is contained within the Irish Sea coastal waterbody to which the proposed development site is connected by the watercourses on site and Baldoyle Estuary. However, likely significant effects as a result of water pollution (in the case of an accidental pollution event during construction), which could impact the coastal QI habitats for which this site is designated, can be excluded due to the substantial open water marine buffer (>5km) which exists between the discharge point of the Mayne River and this SAC, and the potential for dilution and adsorption this buffer offers for any pollutants which could be released in such an event. Furthermore, with regards to the operation of the proposed development, there is no potential for significant effects on this SAC as the majority of the park will not be composed of hardstanding and therefore surface water will dissipate to ground through infiltration. Therefore, likely significant effects on this SAC during both the construction and operation of the proposed development can be excluded.

Table 1 European Sites within the vicinity of the Proposed Development (information downloaded from www.npws.ie)		
Site name and code	**Reasons for designation[6] (*= Priority Habitat)** **(Sourced from NPWS online Conservation Objectives)**	**Do any potential receptor-pathway-source links exist between the proposed development and the Natura 2000 site?** (European sites are "*Relevant*" where a relevant source-pathway-receptor link exists).
Malahide Estuary SAC [000205] *c.* 3.3km west	**Conservation Objectives Version 1.0 (27/05/2013)** **Annex I Habitats:** - Mudflats and sandflats not covered by seawater at low tide [1140] - Salicornia and other annuals colonising mud and sand [1310] - Spartina swards (*Spartinion maritimae*) [1320] - Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] - Mediterranean salt meadows (*Juncetalia maritimi*) [1410] - Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] - Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	Yes, there is a potential source-receptor pathway between the proposed development and the European site via the surface water network due to the fact that this SAC is contained within the North-western Irish Sea coastal waterbody to which the proposed development site is connected by the watercourses on site, Baldoyle Estuary and the Irish Sea. However, likely significant effects as a result of water pollution (in the case of an accidental pollution event during construction), which could impact the coastal QI habitats for which this site is designated, can be excluded due to the substantial open water marine buffer (>5km) which exists between the discharge point of the Mayne River and this SAC, and the potential for dilution and adsorption this buffer offers for any pollutants which could be released in such an event. Furthermore, with regards to the operation of the proposed development, there is no potential for significant effects on this SAC as the majority of the park will not be composed of hardstanding and therefore surface water will dissipate to ground through infiltration. Therefore, likely significant effects on this SAC during both the construction and operation of the proposed development can be excluded.
Howth Head SAC [000202] *c.* 4.7km south -east	**Conservation Objectives Version 1.0 (06/12/2016)** **Annex I Habitats:** - Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] - European dry heaths [4030]	Yes, there is a potential source-receptor pathway between the proposed development and the European site via the surface water network due to the fact that this SAC is contained within the Irish Sea coastal waterbody to which the proposed development site is connected by the watercourses on site and Baldoyle Estuary. However, the QI habitats for which this SAC is designated both lie above the high-water mark and therefore would not be impacted by water pollution, if such an event occurred of sufficient magnitude to result in impacts

Table 1 European Sites within the vicinity of the Proposed Development (information downloaded from www.npws.ie)		
Site name and code	**Reasons for designation[6] (*= Priority Habitat)** **(Sourced from NPWS online Conservation Objectives)**	**Do any potential receptor-pathway-source links exist between the proposed development and the Natura 2000 site?** (European sites are "*Relevant*" where a relevant source-pathway-receptor link exists).
		over this distance. Furthermore, with regards to the operation of the proposed development, there is no potential for significant effects on this SAC as the majority of the park will not be composed of hardstanding and therefore surface water will dissipate to ground through infiltration. Therefore, likely significant effects on this SAC during both the construction and operation of the proposed development can be excluded.
North Dublin Bay SAC [000206] *c*. 1.2km south	**Conservation Objectives Version 1.0 (27/05/2013)** **Annex I Habitats:** - Mudflats and sandflats not covered by seawater at low tide [1140] - Annual vegetation of drift lines [1210] - Salicornia and other annuals colonising mud and sand [1310] - Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] - Mediterranean salt meadows (Juncetalia maritimi) [1410] - Embryonic shifting dunes [2110] - Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] - Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	Yes, there is a potential source-receptor pathway between the proposed development and the European site via the surface water network due to the fact that this SAC is contained within Dublin Bay which lies adjacent to the Irish Sea coastal waterbody. The proposed development site is connected to The Irish Sea by the watercourses on site and Baldoyle Estuary. However, likely significant effects as a result of water pollution (in the case of an accidental pollution event during construction), which could impact the coastal QI habitats for which this site is designated, can be excluded due to the substantial open water marine buffer (>16km) which exists between the discharge point of the Mayne River and this SAC, and the potential for dilution and adsorption this buffer offers for any pollutants which could be released in such an event. In addition, Baldoyle Bay SAC and North Dublin Bay SAC are separated by land- Sutton- which creates an urban buffer over which any polluted water would not be able to travel. Furthermore, for an accidental pollution event, originating from the proposed development site, to have capacity to impact North Dublin Bay SAC it would have to be of huge magnitude. Considering the type and scale of works involved in the development of the park at Baldoyle Racecourse Park, a pollution event of such magnitude would not occur. Finally, Petalwort, an Annex II species for

Table 1 European Sites within the vicinity of the Proposed Development (information downloaded from www.npws.ie)		
Site name and code	**Reasons for designation[6] (*= Priority Habitat)** **(Sourced from NPWS online Conservation Objectives)**	**Do any potential receptor-pathway-source links exist between the proposed development and the Natura 2000 site?** (European sites are "*Relevant*" where a relevant source-pathway-receptor link exists).
	- Humid dune slacks [2190] **Annex II Species:** - *Petalophyllum ralfsii* (Petalwort) [1395]	which this SAC is designated, is found in coastal dune systems with damp calcareous slacks or machair (NPWS, 2013). These habitats would not be impacted by water pollution as they are found above the shoreline. Furthermore, with regards to the operation of the proposed development, there is no potential for significant effects on this SAC as the majority of the park will not be composed of hardstanding and therefore surface water will dissipate to ground through infiltration. Considering the above, likely significant effects on this SAC during both the construction and operation of the proposed development can be excluded.
Rockabill to Dalkey Island SAC [003000] *c*. 4.4km east	**Conservation Objectives Version 1.0 (07/05/2013)** **Annex I Habitats:** - Reefs [1170] **Annex II Species:** - *Phocoena phocoena* (Harbour Porpoise) [1351]	Yes, there is a potential source-receptor pathway between the proposed development and the European site via the surface water network due to the fact that this SAC is contained within the Irish Sea coastal waterbody to which the proposed development site is connected by the watercourses on site and Baldoyle Estuary. However, likely significant effects as a result of water pollution (in the case of an accidental pollution event during construction), which could impact the coastal QI habitats and marine species (Harbour Porpoise) for which this site is designated, can be excluded due to the substantial open water marine buffer (>5km) which exists between the discharge point of the Mayne River and this SAC, and the potential for dilution and adsorption this buffer offers for any pollutants which could be released in such an event. Furthermore, for an accidental pollution event, originating from the proposed development site, to have capacity to impact Rockabill to Dalkey SAC, or its QI habitats and species, it would have to be of huge magnitude. Considering the type and scale of works involved in the development of the park at Baldoyle Racecourse Park, a pollution event of such magnitude would not occur.

Table 1 European Sites within the vicinity of the Proposed Development (information downloaded from www.npws.ie)		
Site name and code	**Reasons for designation[6] (*= Priority Habitat)** **(Sourced from NPWS online Conservation Objectives)**	**Do any potential receptor-pathway-source links exist between the proposed development and the Natura 2000 site?** (European sites are "*Relevant*" where a relevant source-pathway-receptor link exists).
		Furthermore, with regards to the operation of the proposed development, there is no potential for significant effects on this SAC as the majority of the park will not be composed of hardstanding and therefore surface water will dissipate to ground through infiltration. Therefore, likely significant effects on this SAC during both the construction and operation of the proposed development can be excluded.
Rogerstown Estuary SAC [000208] *c.* 9km north	**Conservation Objectives Version 1.0 (14/08/2013)** **Annex I Habitats:** - Estuaries [1130] - Mudflats and sandflats not covered by seawater at low tide [1140] - Salicornia and other annuals colonising mud and sand [1310] - Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] - Mediterranean salt meadows (Juncetalia maritimi) [1410] - Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] - Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	Yes, there is a potential source-receptor pathway between the proposed development and the European site via the surface water network due to the fact that this SAC is contained within the North-western Irish Sea coastal waterbody to which the proposed development site is connected by the watercourses on site, Baldoyle Estuary and the Irish Sea. However, likely significant effects as a result of water pollution (in the case of an accidental pollution event during construction), which could impact the coastal QI habitats for which this site is designated, can be excluded due to the substantial open water marine buffer (>13.6km) which exists between the discharge point of the Mayne River and this SAC, and the potential for dilution and adsorption this buffer offers for any pollutants which could be released in such an event. Furthermore, for an accidental pollution event, originating from the proposed development site, to have capacity to impact Rogerstown Estuary SAC it would have to be of huge magnitude. Considering the type and scale of works involved in the development of the park at Baldoyle Racecourse Park, a pollution event of such magnitude would not occur. Furthermore, with regards to the operation of the proposed development, there is no potential for significant effects on this SAC as the majority of the park will not be composed of hardstanding and therefore surface water will dissipate to

Table 1 European Sites within the vicinity of the Proposed Development (information downloaded from www.npws.ie)		
Site name and code	**Reasons for designation[6] (*= Priority Habitat)** **(Sourced from NPWS online Conservation Objectives)**	**Do any potential receptor-pathway-source links exist between the proposed development and the Natura 2000 site?** (European sites are "*Relevant*" where a relevant source-pathway-receptor link exists).
		ground through infiltration. Therefore, likely significant effects on this SAC during both the construction and operation of the proposed development can be excluded.
Lambay Island SAC [000204] *c.* 10.5km north-east	**Conservation Objectives Version 1.0 (22/07/2013)** **Annex I Habitats:** - Reefs [1170] - Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] **Annex II Species:** - *Halichoerus grypus* (Grey Seal) [1364] - *Phoca vitulina* (Harbour Seal) [1365]	Yes, there is a potential source-receptor pathway between the proposed development and the European site via the surface water network due to the fact that this SAC is contained within the North-western Irish Sea coastal waterbody to which the proposed development site is connected by the watercourses on site, Baldoyle Estuary and the Irish Sea. However, likely significant effects as a result of water pollution (in the case of an accidental pollution event during construction), which could impact the coastal/marine QI habitats and species for which this site is designated, can be excluded due to the substantial open water marine buffer (>27km) which exists between the discharge point of the Mayne River and this SAC, and the potential for dilution and adsorption this buffer offers for any pollutants which could be released in such an event. Furthermore, for an accidental pollution event, originating from the proposed development site, to have capacity to impact Lambay Island SAC it would have to be of huge magnitude. Considering the type and scale of works involved in the development of the park at Baldoyle Racecourse Park, a pollution event of such magnitude would not occur. In addition, it should be noted that the habitat "vegetated sea cliffs [1230]", for which this SAC is designated lie above the high-water mark and therefore would not be impacted by water pollution. Furthermore, with regards to the operation of the proposed development, there is no potential for significant effects on this SAC as the majority of the park will not be composed of hardstanding and therefore surface water will dissipate to

Table 1 European Sites within the vicinity of the Proposed Development (information downloaded from www.npws.ie)		
Site name and code	**Reasons for designation[6] (*= Priority Habitat)** **(Sourced from NPWS online Conservation Objectives)**	**Do any potential receptor-pathway-source links exist between the proposed development and the Natura 2000 site?** (European sites are "*Relevant*" where a relevant source-pathway-receptor link exists).
		ground through infiltration. Therefore, likely significant effects on this SAC during both the construction and operation of the proposed development can be excluded.
South Dublin Bay SAC [000210] *c*. 6.6km south-west	**Conservation Objectives Version 1.0 (22/08/2013)** **Annex I Habitats:** - Mudflats and sandflats not covered by seawater at low tide [1140] - Annual vegetation of drift lines [1210] - Salicornia and other annuals colonising mud and sand [1310] - Embryonic shifting dunes [2110]	Yes, there is a potential source-receptor pathway between the proposed development and the European site via the surface water network due to the fact that this SAC is contained within Dublin Bay which lies adjacent to the Irish Sea coastal waterbody. The proposed development site is connected to the Irish Sea by the watercourses on site and Baldoyle Estuary. However, likely significant effects as a result of water pollution (in the case of an accidental pollution event during construction), which could impact the coastal QI habitats for which this site is designated, can be excluded due to the substantial open water marine buffer (>20km) which exists between the discharge point of the Mayne River and this SAC, and the potential for dilution and adsorption this buffer offers for any pollutants which could be released in such an event. Furthermore, for an accidental pollution event, originating from the proposed development site, to have capacity to impact South Dublin Bay SAC it would have to be of huge magnitude. Considering the type and scale of works involved in the development of the park at Baldoyle Racecourse Park, a pollution event of such magnitude would not occur. Furthermore, with regards to the operation of the proposed development, there is no potential for significant effects on this SAC as the majority of the park will not be composed of hardstanding and therefore surface water will dissipate to ground through infiltration. Therefore, likely significant effects on this SAC during both the construction and

Table 1 European Sites within the vicinity of the Proposed Development (information downloaded from www.npws.ie)		
Site name and code	**Reasons for designation[6] (*= Priority Habitat)** **(Sourced from NPWS online Conservation Objectives)**	**Do any potential receptor-pathway-source links exist between the proposed development and the Natura 2000 site?** (European sites are "*Relevant*" where a relevant source-pathway-receptor link exists).
		operation of the proposed development can be excluded.
Special Protection Areas (SPAs)		
Baldoyle Bay SPA [004016] <10m east	**Conservation Objectives Version 1.0 (27/02/2013)** **Qualifying Interests:** - Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] - Shelduck (*Tadorna tadorna*) [A048] - Ringed Plover (*Charadrius hiaticula*) [A137] - Golden Plover (*Pluvialis apricaria*) [A140] - Grey Plover (*Pluvialis squatarola*) [A141] - Bar-tailed Godwit (*Limosa lapponica*) [A157] - Wetland and Waterbirds [A999]	A potential source-receptor pathway between the proposed development site and this SPA exists as the desk study revealed that Light-bellied Brent Geese are known to use the area surrounding the proposed development site. Furthermore, data contained within a Natura Impact Statement prepared for a residential development in Raheny (Scott Cawley, 2017), revealed that both the pitches at Red Arches and the area of amenity grassland to the north of Red Arches Road, are known to be used by Light-bellied Brent Geese. These two areas are recognised as *ex-situ* feeding sites[9] for the species and are considered part of the network of *ex-situ* feeding areas used by Light-bellied Brent Geese in the wider Dublin Bay area. The proposed development has the potential to result in direct loss of foraging resource for this species and disturbance impacts during the construction and operation phases of the proposed development. Accordingly, the possibility of significant effects on this species cannot be excluded, in view of the relevant conservation objectives.
Ireland's Eye SPA [004117] *c.* 4km east	**Conservation Objectives Generic Version 6.0 (21/02/2018)** **Qualifying Interests:** - Cormorant (*Phalacrocorax carbo*) [A017]	No, there is no possibility of significant effects on this SPA for the following reasons: ➢ The distance and significant marine buffer which exists between the

[9] Waterbird species may at times use habitats situated within the immediate hinterland of the SPA or in areas ecologically connected to it. These habitats may be referred to as ex-situ sites and reliance on them will vary from species to species and from site to site. Significant habitat change or increase 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. (NPWS, 2012).

Table 1 European Sites within the vicinity of the Proposed Development (information downloaded from www.npws.ie)		
Site name and code	**Reasons for designation[6] (*= Priority Habitat)** **(Sourced from NPWS online Conservation Objectives)**	**Do any potential receptor-pathway-source links exist between the proposed development and the Natura 2000 site?** (European sites are "*Relevant*" where a relevant source-pathway-receptor link exists).
	- Herring Gull (*Larus argentatus*) [A184] - Kittiwake (*Rissa tridactyla*) [A188] - Guillemot (*Uria aalge*) [A199] - Razorbill (*Alca torda*) [A200]	two sites. ➢ Cormorant, Kittiwake, Guillemot and Razorbill are all regarded as seabirds and significant effects on these species can be excluded based on a lack of suitable habitat at the proposed development site. ➢ Whilst records within 2km of the proposed development site do exist for Herring Gull, due to the distance between the proposed development site and this SPA, the birds recorded within 2km are extremely unlikely to be associated with this SPA.
North Bull Island SPA [004006] *c.* 1.1km south	**Conservation Objectives Version 1.0 (09/03/2015)** **Qualifying Interests:** - Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] - Shelduck (*Tadorna tadorna*) [A048] - Teal (*Anas crecca*) [A052] - Pintail (*Anas acuta*) [A054] - Shoveler (*Anas clypeata*) [A056] - Oystercatcher (*Haematopus ostralegus*) [A130] - Golden Plover (*Pluvialis apricaria*) [A140] - Grey Plover (*Pluvialis squatarola*) [A141] - Knot (*Calidris canutus*) [A143] - Sanderling (*Calidris alba*) [A144] - Dunlin (*Calidris alpina*) [A149] - Black-tailed Godwit (*Limosa limosa*) [A156]	A potential source-receptor pathway between the proposed development site and this SPA exists as the desk study revealed that Light-bellied Brent Geese are known to use the area surrounding the proposed development site. Furthermore, data contained within a Natura Impact Statement prepared for a residential development in Raheny (Scott Cawley, 2017), revealed that both the pitches at Red Arches and the area of amenity grassland to the north of Red Arches Road, are known to be used by Light-bellied Brent Geese. These two areas are recognised as *ex-situ* feeding sites[9] for the species and are considered part of the network of *ex-situ* feeding areas used by Light-bellied Brent Geese in the wider Dublin Bay area. The proposed development has the potential to result in direct loss of foraging resource for this species and disturbance impacts during the construction and operation phases of the proposed development. Accordingly, the possibility of significant effects on this species cannot be excluded, in view of the relevant conservation objectives.

Table 1 European Sites within the vicinity of the Proposed Development (information downloaded from www.npws.ie)		
Site name and code	**Reasons for designation[6] (*= Priority Habitat)** **(Sourced from NPWS online Conservation Objectives)**	**Do any potential receptor-pathway-source links exist between the proposed development and the Natura 2000 site?** (European sites are "*Relevant*" where a relevant source-pathway-receptor link exists).
	- Bar-tailed Godwit (*Limosa lapponica*) [A157] - Curlew (*Numenius arquata*) [A160] - Redshank (*Tringa totanus*) [A162] - Turnstone (*Arenaria interpres*) [A169] - Black-headed Gull (*Chroicocephalus ridibundus*) [A179] - Wetland and Waterbirds [A999]	
Howth Head Coast SPA [004113] *c.* 5.2km south-east	**Conservation Objectives Generic Version 6.0 (21/02/2018)** **Qualifying Interests:** - Kittiwake (*Rissa tridactyla*) [A188]	No, there is no possibility of significant effects on this SPA for the following reasons: ➢ The distance and significant marine buffer which exists between the two sites. ➢ Kittiwake are summer visitors to Ireland who breed along steep coastal cliffs. Due to the lack of suitable habitat at the proposed development site significant effects on this QI species, and therefore this SPA, can be excluded.
Malahide Estuary SPA [004025] *c.* 2.9km north-east	**Conservation Objectives Version 1.0 (16/08/2013)** **Qualifying Interests:** - Great Crested Grebe (*Podiceps cristatus*) [A005] - Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] - Shelduck (*Tadorna tadorna*) [A048] - Pintail (*Anas acuta*) [A054] - Goldeneye (*Bucephala clangula*) [A067]	A potential source-receptor pathway between the proposed development site and this SPA exists as the desk study revealed that Light-bellied Brent Geese are known to use the area surrounding the proposed development site. Furthermore, data contained within a Natura Impact Statement prepared for a residential development in Raheny (Scott Cawley, 2017), revealed that both the pitches at Red Arches and the area of amenity grassland to the north of Red Arches Road, are known to be used by Light-bellied Brent Geese. These two areas are recognised as *ex-situ* feeding sites[9] for the species and are considered part of the network of *ex-situ* feeding areas used by Light-bellied Brent Geese in

Table 1 European Sites within the vicinity of the Proposed Development (information downloaded from www.npws.ie)		
Site name and code	**Reasons for designation[6] (*= Priority Habitat)** **(Sourced from NPWS online Conservation Objectives)**	**Do any potential receptor-pathway-source links exist between the proposed development and the Natura 2000 site?** (European sites are "*Relevant*" where a relevant source-pathway-receptor link exists).
	- Red-breasted Merganser (*Mergus serrator*) [A069] - Oystercatcher (*Haematopus ostralegus*) [A130] - Golden Plover (*Pluvialis apricaria*) [A140] - Grey Plover (*Pluvialis squatarola*) [A141] - Knot (*Calidris canutus*) [A143] - Dunlin (*Calidris alpina*) [A149] - Black-tailed Godwit (*Limosa limosa*) [A156] - Bar-tailed Godwit (*Limosa lapponica*) [A157] - Redshank (*Tringa totanus*) [A162] - Wetland and Waterbirds [A999]	the wider Dublin Bay area. The proposed development has the potential to result in direct loss of foraging resource for this species and disturbance impacts during the construction and operation phases of the proposed development. Accordingly, the possibility of significant effects on this species cannot be excluded, in view of the relevant conservation objectives.
Lambay Island SPA [004069] *c.* 10.5km north-east	**Conservation Objectives Generic Version 6.0 (21/02/2018)** **Qualifying Interests:** - Fulmar (*Fulmarus glacialis*) [A009] - Cormorant (*Phalacrocorax carbo*) [A017] - Shag (*Phalacrocorax aristotelis*) [A018] - Greylag Goose (*Anser anser*) [A043] - Lesser Black-backed Gull (*Larus fuscus*) [A183] - Herring Gull (*Larus argentatus*) [A184] - Kittiwake (*Rissa tridactyla*) [A188] - Guillemot (*Uria aalge*) [A199] - Razorbill (*Alca torda*) [A200]	No, there is no possibility of significant effects on this SPA for the following reasons: ➢ The distance and significant marine buffer which exists between the two sites. ➢ Fulmar, Cormorant, Shag, Kittiwake, Guillemot, Razorbill and Puffin are regarded as seabirds. There is no suitable habitat for these species at the proposed development site and therefore *ex-situ* impacts can be excluded. ➢ Greylag geese are winter migrants who winter at coastal sites in Ireland. According to data collected over the course of the desk study, there are no records for this species within 2km of the proposed development site.

Table 1 European Sites within the vicinity of the Proposed Development (information downloaded from www.npws.ie)		
Site name and code	**Reasons for designation[6] (*= Priority Habitat)** **(Sourced from NPWS online Conservation Objectives)**	**Do any potential receptor-pathway-source links exist between the proposed development and the Natura 2000 site?** (European sites are "*Relevant*" where a relevant source-pathway-receptor link exists).
	- Puffin (*Fratercula arctica*) [A204]	➢ Whilst records within 2km of the proposed development site do exist for both Lesser Black-backed Gull and Herring Gull, due to the distance between the proposed development site and this SPA, the birds recorded within 2km are extremely unlikely to be associated with this SPA.
Rogerstown Estuary SPA [004015] *c.* 8.8km north-east	**Conservation Objectives Version 1.0 (27/02/2013)** **Qualifying Interests:** - Greylag Goose (*Anser anser*) [A043] - Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] - Shelduck (*Tadorna tadorna*) [A048] - Shoveler (*Anas clypeata*) [A056] - Oystercatcher (*Haematopus ostralegus*) [A130] - Ringed Plover (*Charadrius hiaticula*) [A137] - Grey Plover (*Pluvialis squatarola*) [A141] - Knot (*Calidris canutus*) [A143] - Dunlin (*Calidris alpina*) [A149] - Black-tailed Godwit (*Limosa limosa*) [A156] - Redshank (*Tringa totanus*) [A162] - Wetland and Waterbirds [A999]	A potential source-receptor pathway between the proposed development site and this SPA exists as the desk study revealed that Light-bellied Brent Geese are known to use the area surrounding the proposed development site. Furthermore, data contained within a Natura Impact Statement prepared for a residential development in Raheny (Scott Cawley, 2017), revealed that both the pitches at Red Arches and the area of amenity grassland to the north of Red Arches Road, are known to be used by Light-bellied Brent Geese. These two areas are recognised as *ex-situ* feeding sites[9] for the species and are considered part of the network of *ex-situ* feeding areas used by Light-bellied Brent Geese in the wider Dublin Bay area. The proposed development has the potential to result in direct loss of foraging resource for this species and disturbance impacts during the construction and operation phases of the proposed development. Accordingly, the possibility of significant effects on this species cannot be excluded, in view of the relevant conservation objectives.
South Dublin Bay and River Tolka Estuary SPA [004024]	**Conservation Objectives Version 1.0 (09/03/2015)** **Qualifying Interests:**	A potential source-receptor pathway between the proposed development site and this SPA exists as the desk study revealed that Light-bellied Brent Geese are known to use the area surrounding the proposed development site.

Table 1 European Sites within the vicinity of the Proposed Development (information downloaded from www.npws.ie)		
Site name and code	**Reasons for designation[6] (*= Priority Habitat)** **(Sourced from NPWS online Conservation Objectives)**	**Do any potential receptor-pathway-source links exist between the proposed development and the Natura 2000 site?** (European sites are "*Relevant*" where a relevant source-pathway-receptor link exists).
	- Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] - Oystercatcher (*Haematopus ostralegus*) [A130] - Ringed Plover (*Charadrius hiaticula*) [A137] - Grey Plover (*Pluvialis squatarola*) [A141] - Knot (*Calidris canutus*) [A143] - Sanderling (*Calidris alba*) [A144] - Dunlin (*Calidris alpina*) [A149] - Bar-tailed Godwit (*Limosa lapponica*) [A157] - Redshank (*Tringa totanus*) [A162] - Black-headed Gull (*Chroicocephalus ridibundus*) [A179] - Roseate Tern (*Sterna dougallii*) [A192] - Common Tern (*Sterna hirundo*) [A193] - Arctic Tern (*Sterna paradisaea*) [A194] - Wetland and Waterbirds [A999]	Furthermore, data contained within a Natura Impact Statement prepared for a residential development in Raheny (Scott Cawley, 2017), revealed that both the pitches at Red Arches and the area of amenity grassland to the north of Red Arches Road, are known to be used by Light-bellied Brent Geese. These two areas are recognised as *ex-situ* feeding sites[9] for the species and are considered part of the network of *ex-situ* feeding areas used by Light-bellied Brent Geese in the wider Dublin Bay area. The proposed development has the potential to result in direct loss of foraging resource for this species and disturbance impacts during the construction and operation phases of the proposed development. Accordingly, the possibility of significant effects on this species cannot be excluded, in view of the relevant conservation objectives.
Dalkey Islands SPA [004172] *c.* 13.3km south-east	**Conservation Objectives Generic Version 6.0 (21/02/2018)** **Qualifying Interests:** - Roseate Tern (*Sterna dougallii*) [A192] - Common Tern (*Sterna hirundo*) [A193] - Arctic Tern (*Sterna paradisaea*) [A194]	No, there is no possibility of significant effects on this SPA for the following reasons: ➢ The distance and significant marine buffer which exists between the two sites; ➢ Terns are summer visitors to Ireland and breed along the coast. There is no suitable habitat for breeding terns at the proposed development site and therefore *ex-situ* impacts can be excluded.

Figure 5: Location of QI Annex I Saltmarsh habitats[10] within the boundary of the proposed development site[11]

[10] Spatial data in relation to Annex I saltmarsh habitats sourced from Article 17 habitat data for Atlantic Salt Meadows [1410] and Mediterranean Salt Meadows [1330], downloaded from the following NPWS webpage: https://www.npws.ie/maps-and-data/habitat-and-species-data/article-17/2019/habitats/coastal-habitats [Accessed 11/02/2021]

[11] Other areas of Atlantic Salt Meadows [1410] and Mediterranean Salt Meadows [1330] exist in other areas of Baldoyle Bay SAC. The data has been clipped to only show those areas of QI Annex I habitat which fall within the red line boundary of the proposed development site.

5.3 Conclusions on Information Provided for Screening Assessment

Information to enable An Bord Pleanála to perform its statutory function to carry out a screening for AA has been presented within this section of the report.

Following an examination, analysis and evaluation of the relevant information including, in particular, the nature of the proposed development and the likelihood of significant effects on any European site, and applying the precautionary principle, it is the professional opinion of the authors that, on the basis of objective information, the possibility may be excluded that the proposed development will have a significant effect on any of the European sites listed below:

- Ireland's Eye SAC [002193]
- Malahide Estuary SAC [000205]
- Howth Head SAC [000202]
- North Dublin Bay SAC [000206]
- Rockabill to Dalkey Island SAC [003000]
- Rogerstown Estuary SAC [000208]
- Lambay Island SAC [000204]
- South Dublin Bay SAC [000210]
- Ireland's Eye SPA [004117]
- Howth Head Coast SPA [004113]
- Lambay Island SPA [004069]
- Dalkey Islands SPA [004172]

However, following an examination, analysis and evaluation of the relevant information, including, in particular, the nature of the proposed development and the likelihood of significant effects on European sites, and again applying the precautionary principle, it is the professional opinion of the authors of this report that it Is not possible to exclude, on the basis of objective information, that the proposed development, individually or in combination with other plans or projects, will have a likely significant effect on the following European sites:

- Baldoyle Bay SAC [000199]
- Baldoyle Bay SPA [004016]
- North Bull Island SPA [004006]
- Malahide Estuary SPA [004025]
- Rogerstown Estuary SPA [004015]
- South Dublin Bay and River Tolka Estuary SPA [004024]

In the case of Baldoyle Bay SAC [000199], for which the possibility of significant effects cannot be excluded, the likely significant risks (in the absence of mitigation) arise from potential construction-related surface water discharges from the proposed development site and the potential for these effects to reach downstream European sites. In addition, there is also the potential risk that invasive species, which have been recorded on site, could be transferred to downstream European sites

through construction related activities (e.g. earthworks). It was concluded therefore that likely significant effects on this European site may require mitigation. Whilst works are proposed within the boundary of the SAC, there is no potential for direct loss of QI habitat as no works are proposed in areas where QI habitat has previously been recorded. In addition, no Annex I habitats were identified in the one area within the SAC boundary in which regrading, and excavation works are proposed. This area comprises of improved agricultural grassland.

In the case of Baldoyle Bay SPA [004016], North Bull Island SPA [004006], Malahide Estuary SPA [004025], Rogerstown Estuary SPA [004015] and South Dublin Bay and River Tolka Estuary SPA [004024], for which the possibility of significant effects cannot be excluded, the likely significant risks arise from the loss of inland feeding habitat which is known to be utilised by Light-bellied Brent Geese, as an external site connected to each of these SPAs, and the potential for serious disturbance impacts on local populations of Light-bellied Brent Geese which are associated with these SPAs both during construction and operation. It was therefore concluded that further investigation and possibly mitigation may be required to reduce/ avoid these risks.

However, the authors of this report acknowledge it is for An Bord Pleanála, as the competent authority, to carry out a screening for appropriate assessment and to reach one of the following determinations:

(a) Stage 2 AA of the proposed development is required if it cannot be excluded, on the basis of objective information, that the proposed development, individually or in combination with other plans or projects, will have a significant effect on a European site;

(b) Stage 2 AA of the proposed development is not required if it can be excluded, on the basis of objective information, that the proposed development, individually or in combination with other plans or projects, will have a significant effect on a European site.

6 PROVISION OF INFORMATION FOR APPROPRIATE ASSESSMENT

This section of the NIS assesses the direct and indirect impacts of the proposed development with respect to the European sites which fall within the ZoI of the proposed development. In this instance six European sites fall within the ZoI; Baldoyle Bay SAC, Baldoyle Bay SPA, North Bull Island SPA, Malahide Estuary SPA, Rogerstown Estuary SPA and South Dublin Bay and River Tolka Estuary SPA.

The potential for significant effects arising from the proposed development on the integrity of these European sites, in light of their conservation objectives, is examined in Section 6.1 below. This sets the scope for the Appropriate Assessment (Stage 2).

6.1 Summary of European Sites Relevant to Appropriate Assessment (Stage 2)

6.1.1 Baldoyle Bay SAC

Condition of Site and Management

The Natura 2000 Standard Data Form (NPWS, 2017a) states that the SAC comprises a typical eastern estuarine system with fairly extensive intertidal sand and mud flats. Other habitats contained within the SAC boundary include saltmarsh, sand dunes, brackish marshes and the tidal section of the Mayne River. The inner parts of the site are sheltered from the sea by a large sand dune peninsula. The quality of habitats present is variable, but generally good. Saltmarshes are well represented and are at least of moderate quality. The site is of importance for wintering waterfowl. The main threats include non-motorised nautical sports, walking, horse-riding and non-motorised vehicles, golf courses, non-native invasive species, urbanised areas and human habitation.

6.1.2 Baldoyle Bay SPA

Condition of Site and Management

The Natura 2000 Standard Data Form (NPWS, 2017b) states that the SPA is a relatively small, typical estuarine system with fairly extensive intertidal sand and mud flats, which have *Zostera* spp. It has good salt marsh fringes where birds roost. The quality of habitats present is variable, but generally good. The site supports a good diversity of wintering waterfowl, notably an internationally important population of Light-bellied Brent Geese. It also has nationally important populations of Shelduck, Pintail, Ringed Plover, Golden Plover and Black-tailed Godwit. At high tide the shallow waters regularly attract species such as Great-crested Grebe and Red-breasted Merganser. The main threats to the site include potential impacts from urban areas and human habitation, reclamation of the land from sea, estuary or marsh, the potential spread of invasive non-native species and fertilisation.

6.1.3 North Bull Island SPA

Condition of Site and Management

The Natura 2000 Standard Data Form (NPWS, 2017c) lists the SPA as one of the top ten sites in the country for wintering waterfowl. It provides important feeding and roosting habitat for bird species listed as Special Conservation Interests (SCIs) for the site and supports internationally important populations of Light-bellied Brent Goose and Bar-tailed Godwit. The quality of the estuarine habitats in the SPA is considered to be very good, part of which are designated as North Dublin Bay cSAC. There are no serious imminent threats to the wintering birds. Threats to the site include oil pollution

from Dublin Port along with localised commercial bait digging, disturbance from activities such as sailing, walkers and dogs.

6.1.4 Malahide Estuary SPA

Condition of Site and Management

The Natura 2000 Standard Data Form (NPWS, 2017d) states that the SPA comprises of the estuary of the River Broadmeadow. It is a site of high importance for wintering waterfowl and supports a particularly good diversity of species. It has an internationally important population of Light-bellied Brent Geese and nationally important populations of a further 12 species. Of particular note are the populations of Shelduck, Pintail, Red-breasted Merganser, Grey Plover and Dunlin. The site is one of the few in eastern Ireland where substantial numbers of Goldeneye occur. It has a regionally important population of Bar-tailed Godwit. The site is an important and regular site for a range of autumn passage migrants, especially Curlew, Sandpiper and Ruff. It supports a regular flock of non-breeding Mute Swan. The main threats to the site include potential impacts from the reclamation of land from sea, estuary or marsh, paths, tracks and cycling tracks, urbanised areas and human habitation and nautical sports.

6.1.5 Rogerstown Estuary SPA

Condition of Site and Management

The Natura 2000 Standard Data Form (NPWS, 2017e) states that the SPA comprises of a relatively small typical estuarine system, which receives its freshwater from the Ballyboghil and Ballough rivers and contains salt marsh and sand dune habitats as well as some agricultural fields of ornithological or botanical interests adjoining the estuary. It is of high importance for wintering waterfowl, with an internationally important population of Light-bellied Brent Geese and nationally important populations of Knot, Shelduck and Grey Plover. It is an important and regular site for a range of autumn passage migrants especially Little Stint, Curlew Sandpiper, Ruff and Green Sandpiper. The main threats to the site include potential impacts from the landfill, land reclamation and drying out, invasive non-native species, disposal of industrial waste and household/recreational waste and fertilisation.

6.1.6 South Dublin Bay and River Tolka Estuary SPA

Condition of Site and Management

The Natura 2000 Standard Data Form (NPWS, 2017f) states that the SPA possesses extensive intertidal flats, part of which are designated as South Dublin Bay SAC, and which supports wintering waterfowl as part of the wider Dublin Bay population. The site also supports an internationally important population of Light-bellied Brent Geese, feeding on the stands of *Zostera* spp. It hosts nationally important numbers of six species, is an important site for wintering gulls and is an autumn roosting site for a significant number of terns. The main threat to the site is land reclamation, with other threats including oil pollution from Dublin Port, commercial bait digging and disturbance by walkers and dogs.

6.2 Conservation Objectives

The Habitats Directive as transposed into Irish law and Part XAB of the Planning and Development Act 2000 requires the NIS to focus on the implications of a proposed development, on its own or in combination with other plans or projects, for one or more than one European site, in view of the conservation objectives of the sites. In accordance with Article 6(3) of the Habitats directive, a project must be assessed in terms of its potential effect(s) on a European site's conservation objectives.

Site specific conservation objectives (SSCOs) for the qualifying interests (QIs) and the Special Conservation Interests (SCIs) of Baldoyle Bay SPA, North Bull Island SPA, Malahide Estuary SPA, Rogerstown Estuary SPA and South Dublin Bay and River Tolka Estuary SPA and the Annex I Habitats of Baldoyle Bay SAC are presented in Table 3 below, as sourced directly from conservation objectives documents (accessed online at www.npws.ie on the 12th February 2021). SSCOs aim to define the favourable conservation condition for a SCI species, Annex I habitat and/or Annex II species at that European site. The favourable conservation status of a SCI species or an Annex II species is achieved when:

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

While, the favourable conservation status of a habitat is achieved when:

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

The proposed development has been assessed in context of the conservation objectives' attributes "population trend" and "distribution" and their specific targets (listed below in Table 3) for each SCI species of the relevant European sites and in the context of the conservation objective's attributes for and their specific targets for each Annex I habitat and Annex II species for the relevant European sites, the results of which are summarised in Section 6.4 of this report.

The SCI of Wetlands [999] relates specifically to wetland habitat located within each SPA as a resource for the waterbirds that utilise it. As concluded in the Screening for Appropriate Assessment process (see Section 0 of this report), there is a possibility of significant impacts from the proposed development on this SCI as a consequence of construction-related surface water discharges (in the absence of mitigation) for Baldoyle Bay SPA. This potential impact has been assessed in Section 6.4.3 of this report and mitigation measures have been provided to ensure that there will be no impact on the conservation objectives of this European site.

The current conservation status of the qualifying interests and conditions underpinning site integrity for the relevant European sites are summarised in Table 2. The current conservation status of each

the Annex I habitats and Annex II species is sourced from *Status of EU Protected Habitats and Species in Ireland* (NPWS, 2019), while the current conservation status of each SCI species (i.e. "Green", "Amber" or "Red" categories) is sourced from *Birds of Conservation Concern in Ireland 2014 – 2019* (the "BoCCI" list, Colhoun & Cummins, 2014). These categories are determined for each species based on a national assessment which considers a range of quantitative criteria. Red-listed species are those of highest conservation priority, being globally threatened, declining rapidly in abundance or range, or having undergone historic declines from which they have not recently recovered. Amber-listed species have an unfavourable status in Europe, have moderately declined in abundance or range, a very small population size, a localised distribution, or occur in internationally important numbers. Those species which are green-listed do not meet any of these criteria and therefore require little direct conservation action (Colhoun & Cummins, 2014).

6.2.1 Key QI Attributes of Particular Relevance to the Proposed Development

There are two attributes that underpin the special conservation interests of all five SPA sites, which may potentially be impacted upon as a result of the proposed development: foraging habitat and food supply. In particular, the proposed development will result in the loss of part of the Red Arches pitches and the amenity grassland area to the north of Red Arches Road as *ex-situ* inland feeding sites currently utilised by Light-bellied Brent Geese. This in turn may result in a reduction in the proportion of the existing foraging habitat in the Dublin area available to Light-bellied Brent Geese and may impact on the existing terrestrial food supply of Light-bellied Brent Geese in Dublin.

Another attribute that underpins the special conservation interests of both Baldoyle Bay SPA and Baldoyle Bay SAC is water quality including nutrient levels, water clarity and sediment levels. In the absence of mitigation, this condition may be impacted upon as a result of an accidental pollution incident occurring (e.g. accidental spillages of soils, cement or other potential pollutants into any of the four watercourses which flow through the proposed development site) during the construction stage of the proposed development, which could result in potential effects to reach these European sites. The potential for these attributes to be impacted upon has been investigated as part of this assessment, the results of which are presented in Section 6.4 of this report.

Table 2 Qualifying Interests, BoCCI Status, Current Conservation Status, Conditions underpinning site integrity for relevant European sites

Table 2 Qualifying Interests, BoCCI Status, Current Conservation Status, Conditions underpinning site integrity for relevant European sites		
Site Name & Code	**Qualifying Interests [Bird species code, BoCCI status, Current Conservation Status]**	**Conditions underpinning site integrity** (items indicated in bold are of relevance to the proposed development)
Special Areas of Conservation (SACs)		
Baldoyle Bay SAC [000199]	Annex I habitats for which the site is designated: • Mudflats and sandflats not covered by seawater at low tide [1140 – Inadequate] • Salicornia and other annuals colonising mud and sand [1310 - Favourable] • Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330 - Inadequate] • Mediterranean salt meadows (Juncetalia maritimi) [1410 - Inadequate]	• **Water quality including nutrient levels, water clarity, sediment levels** • **Surface and ground water quality** • **Appropriate levels of disturbance** • Water levels • Air quality • Tidal currents • Erosion and deposition rates • Height and frequency of the tides, availability of foreshore sand and the average strength of the on-shore winds • **Maintaining appropriate levels of disturbance** • Controlling bait digging
Special Protection Areas (SPAs)		
Baldoyle Bay SPA [004016]	• Light-bellied Brent Goose (*Branta bernicla hrota*) [A046 - Amber] • Shelduck (Tadorna tadorna) [A048 - Amber] • Ringed Plover (*Charadrius hiaticula*) [A137 - Amber] • Golden Plover (*Pluvialis apricaria*) [A140 - Amber] • Grey Plover (*Pluvialis squatarola*) [A141 - Amber] • Bar-tailed Godwit (*Limosa lapponica*) [A157 - Amber] • Wetlands & Waterbirds [A999]	• **Water quality including nutrient levels, water clarity, sediment levels** • **Foraging Habitat** • **Food supply** • **Appropriate Levels of disturbance** • Water levels • Tidal currents • Erosion / deposition levels • Freshwater influx • Intertidal habitats • Air Quality
North Bull Island SPA (004006)	• Oystercatcher (*Haematopus ostralegus*) [A130 - Amber] • Light-bellied Brent Goose (*Branta bernicla hrota*) [A046 -Amber] • Shelduck (*Tadorna tadorna*) [A048 -Amber] • Teal (*Anas crecca*) [A052 - Amber] • Pintail (*Anas acuta*) [A054 - Red] • Shoveler (*Anas clypeata*) [A056 - Red] • Golden Plover (*Pluvialis apricaria*) [A140 - Red] • Grey Plover (*Pluvialis squatarola*) [A141 - Amber] • Knot (*Calidris canutus*) [A143 - Red] • Sanderling (*Calidris alba*) [A144 - Green] • Dunlin (*Calidris alpina*) [A149 - Amber]	• Water quality including nutrient levels, water clarity, sediment levels • **Foraging Habitat** • **Food supply** • Appropriate Levels of disturbance • Water levels • Tidal currents • Erosion / deposition levels • Freshwater influx • Intertidal habitats • Air Quality

Table 2 Qualifying Interests, BoCCI Status, Current Conservation Status, Conditions underpinning site integrity for relevant European sites		
Site Name & Code	**Qualifying Interests [Bird species code, BoCCI status, Current Conservation Status]**	**Conditions underpinning site integrity** **(items indicated in bold are of relevance to the proposed development)**
	• Black-tailed Godwit (*Limosa limosa*) [A156 - Amber] • Bar-tailed Godwit (*Limosa lapponica*) [A157 - Amber] • Curlew (*Numenius arquata*) [A160 - Red] • Redshank (*Tringa totanus*) [A162 - Red] • Turnstone (*Arenaria interpres*) [A169 - Green] • Black-headed Gull (*Larus ridibundus*) [A179 - Red] • Wetlands & Waterbirds [A999]	
Malahide Estuary SPA[004025]	• Great Crested Grebe (*Podiceps cristatus*) [A005 - Amber] • Light-bellied Brent Goose (*Branta bernicla hrota*) [A046 - Amber] • Shelduck (*Tadorna tadorna*) [A048 - Amber] • Pintail (*Anas acuta*) [A054 - Red] • Goldeneye (*Bucephala clangula*) [A067 - Red] • Red-breasted Merganser (*Mergus serrator*) [A069 - Green] • Oystercatcher (*Haematopus ostralegus*) [A130 - Amber] • Golden Plover (*Pluvialis apricaria*) [A140 - Amber] • Grey Plover (*Pluvialis squatarola*) [A141 - Amber] • Knot (*Calidris canutus*) [A143 - Red] • Dunlin (*Calidris alpina*) [A149 - Amber] • Black-tailed Godwit (*Limosa limosa*) [A156 - Amber] • Bar-tailed Godwit (*Limosa lapponica*) [A157 - Amber] • Redshank (*Tringa totanus*) [A162 - Red] • Wetlands & Waterbirds [A999]	• Water quality including nutrient levels, water clarity, sediment levels • **Foraging Habitat** • **Food supply** • Appropriate Levels of disturbance • Water levels • Tidal currents • Erosion / deposition levels • Freshwater influx • Intertidal habitats • Air Quality
Rogerstown Estuary SPA [004015]	• Greylag Goose (*Anser anser*) [A043 - Amber] • Light-bellied Brent Goose (*Branta bernicla hrota*) [A046 - Amber] • Shelduck (*Tadorna tadorna*) [A048 - Amber] • Shoveler (*Anas clypeata*) [A056 - Red] • Oystercatcher (*Haematopus ostralegus*) [A130 - Amber] • Ringed Plover (*Charadrius hiaticula*) [A137 - Amber] • Grey Plover (*Pluvialis squatarola*) [A141 -	• Water quality including nutrient levels, water clarity, sediment levels • **Foraging Habitat** • **Food supply** • Appropriate Levels of disturbance • Water levels • Tidal currents • Erosion / deposition levels • Freshwater influx • Intertidal habitats

Table 2 Qualifying Interests, BoCCI Status, Current Conservation Status, Conditions underpinning site integrity for relevant European sites		
Site Name & Code	**Qualifying Interests [Bird species code, BoCCI status, Current Conservation Status]**	**Conditions underpinning site integrity** **(items indicated in bold are of relevance to the proposed development)**
	Amber] • Knot (*Calidris canutus*) [A143 - Red] • Dunlin (*Calidris alpina*) [A149 - Amber] • Black-tailed Godwit (*Limosa limosa*) [A156 - Amber] • Redshank (*Tringa totanus*) [A162 - Red] • Wetland and Waterbirds [A999]	• Air Quality
South Dublin Bay and River Tolka Estuary SPA (004024)	• Light-bellied Brent Goose (*Branta bernicla hrota*) [A046 - Amber] • Oystercatcher (*Haematopus ostralegus*) [A130 - Amber] • Ringed Plover (*Charadrius hiaticula*) [A137 - Amber] • Grey Plover (*Pluvialis squatarola*) [A140 - Amber] • Knot (*Calidris canutus*) [A143 - Red] • Sanderling (*Calidris alba*) [A144 - Green] • Dunlin (*Calidris alpina*) [A149 - Amber] • Bar-tailed Godwit (*Limosa lapponica*) [A157 - Amber] • Redshank (*Tringa totanus*) [A162 - Red] • Black-headed Gull (*Larus ridibundus*) [A179 - Red] • Roseate Tern (*Sterna dougallii*) [A192 - Amber] • Common Tern (*Sterna hirundo*) [A193 - Amber] • Arctic Tern (*Sterna paradisaea*) [A194 - Amber] • Wetlands & Waterbirds [A999]	• Water quality including nutrient levels, water clarity, sediment levels • **Foraging Habitat** • **Food supply** • Appropriate Levels of disturbance • Water levels • Tidal currents • Erosion / deposition levels • Freshwater influx • Intertidal habitats • Air Quality

Table 3 Site-specific Objectives for relevant European sites

Table 3 Site-specific Objectives for relevant European sites[12]		
Baldoyle Bay SPA [004016]		
Light-bellied Brent Goose (*Branta bernicla hrota*) [A046], Shelduck (*Tadorna tadorna*) [A048], Ringed Plover (*Charadrius hiaticula*) [A137], Golden Plover (*Pluvialis apricaria*) [A140], Grey Plover (*Pluvialis squatarola*) [A141], Bar-tailed Godwit (*Limosa lapponica*) [A157] **(Maintain the favourable conservation condition)**		
Attribute	**Measure**	**Target**
Population trend	Percentage change	Long term population trend stable or increasing
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing and intensity of use of areas by all of the above-named species, other than that occurring from natural patterns of variation
Wetlands [A999] (Maintain the favourable conservation condition)		
Habitat area	Hectares	The permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 263ha, other than that occurring from natural patterns of variation
North Bull Island SPA		
Light-bellied Brent Goose (*Branta bernicla hrota*) [A046], Shelduck (*Tadorna tadorna*) [A048], Teal (*Anas crecca*) [A052], Pintail (*Anas acuta*) [A054], Shoveler (*Anas clypeata*) [A056], Oystercatcher (*Haematopus ostralegus*) [A130], Golden Plover (*Pluvialis apricaria*) [A140], Grey Plover (*Pluvialis squatarola*) [A141], Knot (*Calidris canutus*) [A143], Sanderling (*Calidris alba*) [A144], Dunlin (*Calidris alpina alpina*) [A149], Black-tailed Godwit (*Limosa limosa*) [A156], Bar-tailed Godwit (*Limosa lapponica*) [A157], Curlew (*Numenius arquata*) [A160], Redshank (*Tringa totanus*) [A162], Turnstone (*Arenaria interpres*) [A169], Black-headed Gull (*Chroicocephalus ridibundus*) [A179] **(Maintain the favourable conservation condition)**		

[12] Taken from Conservation Objectives documents, accessed online at www.npws.ie 12/02/2021

Table 3 Site-specific Objectives for relevant European sites[12]		
Attribute	**Measure**	**Target**
Population trend	Percentage change	Long term population trend stable or increasing
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing and intensity of use of areas by all of the above-named species, other than that occurring from natural patterns of variation
Wetlands [A999] (Maintain the favourable conservation condition)		
Habitat area	Hectares	The permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 1713ha, other than that occurring from natural patterns of variation
Malahide Estuary SPA[004025]		
Great Crested Grebe (*Podiceps cristatus*) [A005], Light-bellied Brent Goose (*Branta bernicla hrota*) [A046], Shelduck (*Tadorna tadorna*) [A048], Pintail (*Anas acuta*) [A054], Goldeneye (*Bucephala clangula*) [A067], Red-breasted Merganser (*Mergus serrator*) [A069], Oystercatcher (*Haematopus ostralegus*) [A130], Golden Plover (*Pluvialis apricaria*) [A140], Grey Plover (*Pluvialis squatarola*) [A141], Knot (*Calidris canutus*) [A143], Dunlin (*Calidris alpina*) [A149], Black-tailed Godwit (*Limosa limosa*) [A156], Bar-tailed Godwit (*Limosa lapponica*) [A157], Redshank (*Tringa totanus*) [A162] **(Maintain the favourable conservation condition)**		
Attribute	**Measure**	**Target**
Population trend	Percentage change	Long term population trend stable or increasing
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing and intensity of use of areas by all of the above-named species, other than that occurring from natural patterns of variation
Wetlands [A999] (Maintain the favourable conservation condition)		
Habitat area	Hectares	The permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 765ha, other than that occurring from natural patterns of variation
Rogerstown Estuary SPA [004015]		

Table 3 Site-specific Objectives for relevant European sites[12]		
Greylag Goose (*Anser anser*) [A043], Light-bellied Brent Goose (*Branta bernicla hrota*) [A046], Shoveler (*Anas clypeata*) [A056], Ringed Plover (*Charadrius hiaticula*) [A137], Shelduck (*Tadorna tadorna*) [A048], Oystercatcher (*Haematopus ostralegus*) [A130], Grey Plover (*Pluvialis squatarola*) [A141], Knot (*Calidris canutus*) [A143], Dunlin (*Calidris alpina*) [A149], Black-tailed Godwit (*Limosa limosa*) [A156], Redshank (*Tringa totanus*) [A162] **(Maintain the favourable conservation condition)**		
Conservation Objectives for the following species: Greylag Goose (*Anser anser*) [A043], Light-bellied Brent Goose (*Branta bernicla hrota*) [A046], Shoveler (*Anas clypeata*) [A056], Ringed Plover (*Charadrius hiaticula*) [A137]		
Attribute	**Measure**	**Target**
Population trend	Percentage change	Long term population trend stable or increasing
Distribution	Number and range of areas used by waterbirds	No significant decrease in the range, timing or intensity of use of areas by all of the above-named species, other than that occurring from natural patterns of variation
Conservation Objectives for the following species: Shelduck (*Tadorna tadorna*) [A048], Oystercatcher (*Haematopus ostralegus*) [A130], Grey Plover (*Pluvialis squatarola*) [A141], Knot (*Calidris canutus*) [A143], Dunlin (*Calidris alpina*) [A149], Black-tailed Godwit (*Limosa limosa*) [A156], Redshank (*Tringa totanus*) [A162]		
Population trend	Percentage change	Long term population trend stable or increasing
Distribution	Number, range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by all of the above-named species, other than that occurring from natural patterns of variation
Wetlands [A999] (Maintain the favourable conservation condition)		
Habitat area	Hectares	The permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 646ha, other than that occurring from natural patterns of variation
South Dublin Bay and River Tolka Estuary SPA		
Light-bellied Brent Goose (*Branta bernicla hrota*) [A046], Oystercatcher (*Haematopus ostralegus*) [A130], Ringed Plover (*Charadrius hiaticula*) [A137], Grey Plover (*Pluvialis squatarola*) [A141], Knot (*Calidris canutus*) [A143], Sanderling (*Calidris alba*) [A144], Dunlin (*Calidris alpina alpina*) [A149], Bar-tailed Godwit (*Limosa lapponica*) [A157],		

Table 3 Site-specific Objectives for relevant European sites[12]		
Redshank (*Tringa totanus*) [A162], Black-headed Gull (*Chroicocephalus ridibundus*) [A179], Roseate Tern (*Sterna dougallii*) [A192], Common Tern (*Stena hirundo*) [A193], Arctic Tern (*Sterna paradisaea*) [A194] **(Maintain the favourable conservation condition)** **Note: Grey Plover (*Pluvialis squatarola*) [A141] is proposed for removal from the list of SCI's for the site so no site-specific conservation objective is included for the species**		
Conservation Objectives for the following species: Light-bellied Brent Goose (*Branta bernicla hrota*) [A046], Oystercatcher (*Haematopus ostralegus*) [A130], Ringed Plover (*Charadrius hiaticula*) [A137], Knot (*Calidris canutus*) [A143], Sanderling (*Calidris alba*) [A144], Dunlin (*Calidris alpina alpina*) [A149], Bar-tailed Godwit (*Limosa lapponica*) [A157], Redshank (*Tringa totanus*) [A162], Black-headed Gull (*Chroicocephalus ridibundus*) [A179]		
Attribute	**Measure**	**Target**
Population trend	Percentage change	Long term population trend stable or increasing
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing and intensity of use of areas by all of the above named species, other than that occurring from natural patterns of variation
Conservation Objectives for the following species: Roseate Tern (*Sterna dougallii*) [A192], Arctic Tern (*Sterna paradisaea*) [A194]:		
Attribute	**Measure**	**Target**
Passage population: individuals	Number	No significant decline
Distribution: roosting areas	Number; location; area (hectares)	No significant decline
Prey biomass available	Kilogrammes	No significant decline
Barriers to connectivity	Number; location; shape; area (hectares)	No significant increase
Disturbance at roosting site	Level of impact	Human activities should occur at levels that do not adversely affect the numbers of the two tern species listed above among the post-breeding aggregation of terns

Table 3 Site-specific Objectives for relevant European sites[12]		
Conservation Objectives for the following species: Common Tern (*Stena hirundo*) [A193]		
Attribute	**Measure**	**Target**
Breeding population abundance: apparently occupied nests (AONs)	Number	No significant decline
Productivity rate: fledged young per breeding pair	Mean number	No significant decline
Passage population: individuals	Number	No significant decline
Distribution: breeding colonies	Number; location; area (Hectares)	No significant decline
Distribution: roosting areas	Number; location; area (hectares)	No significant decline
Prey biomass available	Kilogrammes	No significant decline
Barriers to connectivity	Number; location; shape; area (hectares)	No significant increase
Disturbance at breeding site	Level of impact	Human activities should occur at levels that do not adversely affect the breeding Common tern population
Disturbance at roosting site	Level of impact	Human activities should occur at levels that do not adversely affect the numbers of Common Terns among the post-breeding aggregation of terns
Wetlands [A999] (Maintain the favourable conservation condition)		
Habitat area	Hectares	The permanent area occupied by the wetland habitat should be stable and not significantly less than the area of

Table 3 Site-specific Objectives for relevant European sites[12]		
		2192ha, other than that occurring from natural patterns of variation
Baldoyle Bay SAC [000199]		
Mudflats and sandflats not covered by water at low tide [1140] (Maintain the favourable conservation condition)		
Attribute	**Measure**	**Target**
Habitat area	Hectares	The permanent habitat area is stable or increasing, subject to natural processes
Community distribution	Hectares	Conserve the following community types in a natural condition: Fine sand dominated by *Angulus tenuis* community complex; and Estuarine sandy mud with *Pygospio elegans* and *Tubificoides benedii* community complex.
Salicornia and other annuals colonizing mud and sand [1310] (Maintain the favourable conservation condition)		
Attribute	**Measure**	**Target**
Habitat area	Hectares	Area increasing, subject to natural processes, including erosion and succession. For sub-site mapped: Baldoyle - 0.383ha.
Habitat distribution	Occurrence	No decline, or change in habitat distribution, subject to natural processes
Physical structure: sediment supply	Presence/ absence of physical barriers	Maintain the natural circulation of sediment and organic matter, without any physical obstructions
Physical structure: flooding regime	Hectares flooded; frequency	Maintain natural tidal regime
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession
Vegetation structure: vegetation height	Centimeters	Maintain structural variation within sward
Vegetation structure: vegetation cover	Percentage cover at a representative sample of monitoring stops	Maintain more than 90% of the area outside creeks vegetated

Table 3 Site-specific Objectives for relevant European sites[12]		
Vegetation composition: typical species and sub-communities	Percentage cover	Maintain the presence of species-poor communities with typical species listed in the Saltmarsh Monitoring Project (McCorry and Ryle, 2009)
Vegetation structure: negative indicator species- *Spartina anglica*	Hectares	No significant expansion of common cordgrass (*Spartina anglica*), with an annual spread of less then 1%
Atlantic salt meadows *(Glauco-Puccinellietalia maritimae* [1330] (Maintain the favourable conservation condition)		
Attribute	**Measure**	**Target**
Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession. For sub-site mapped: Baldoyle- 11.98ha.
Habitat distribution	Occurrence	No decline, or change in habitat distribution, subject to natural processes
Physical structure: sediment supply	Presence/ absence of physical barriers	Maintain natural circulation of sediments and organic matter, without any physical obstructions
Physical structure: creeks and pans	Occurrence	Maintain/ restore creek and pan structure, subject to natural processes, including erosion and succession
Physical structure: flooding regime	Hectares flooded; frequency	Maintain natural tidal regime
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession
Vegetation structure: vegetation height	Centimetres	Maintain structural variation within sward
Vegetation structure: vegetation cover	Percentage cover at a representative number of monitoring stops	Maintain more than 90% of area outside creeks vegetated
Vegetation composition: typical species and sub-communities	Percentage cover at a representative number of monitoring stops	Maintain range of sub-communities with typical species listed in the Saltmarsh Monitoring Project (McCorry and Ryle, 2009)

Table 3 Site-specific Objectives for relevant European sites[12]		
Vegetation structure: negative indicator species - *Spartina anglica*	Hectares	No significant expansion of common cordgrass (*Spartina anglica*), with an annual spread of less than 1%
Mediterranean salt meadows (*Juncetalia maritimi*) [1410] (Maintain the favourable conservation condition)		
Attribute	**Measure**	**Target**
Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession. For sub-site mapped: Baldoyle- 2.64ha.
Habitat distribution	Occurrence	No decline, or change in habitat distribution, subject to natural processes
Physical structure: sediment supply	Presence/ absence of physical barriers	Maintain natural circulation of sediments and organic matter, without any physical obstructions
Physical structure: creeks and pans	Occurrence	Maintain creek and pan structure, subject to natural processes, including erosion and succession
Physical structure: flooding regime	Hectares flooded; frequency	Maintain natural tidal regime
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession
Vegetation structure: vegetation height	Centimetres	Maintain structural variation within sward
Vegetation structure: vegetation cover	Percentage cover at a representative number of monitoring stops	Maintain more than 90% of area outside creeks vegetated
Vegetation composition: typical species	Percentage cover	Maintain range of sub-communities with typical species listed in the Saltmarsh Monitoring Project (McCorry and Ryle, 2009)
Vegetation structure: negative indicator species - *Spartina anglica*	Hectares	No significant expansion of common cordgrass (*Spartina anglica*), with an annual spread of less than 1%

6.3 Overwintering Bird Surveys[13]

6.3.1 Methodology

Desk study records

The following sources of information have been used to inform the Stage 2 Appropriate Assessment for the proposed development:

- *Winter bird study of lands around Baldoyle Bay 2016-2017*. Report to Fingal County Council from Natura Environmental Consultants. Wicklow. (Nairn, R., Fox, J. 2017).
- *Winter bird survey of the lands surrounding the Baldoyle Estuary*. Unpublished report to Fingal County Council. Birdwatch Ireland. Fingal Branch. (Pierce, S., Dillon D., 2012).
- *Natura Impact Statement- Information for Stage 2 Appropriate Assessment. Proposed Residential Development, St. Paul's College, Sybil Hill Road, Raheny, Dublin 5* (Scott Cawley, 2017).
- *Irish Wetland Bird Survey (I-WeBS) Site Summary Table for 0U403 Baldoyle Bay* (Birdwatch Ireland, 2019)[14]
- *Baldoyle Bay Special Protection Area (Site Code 4016) Conservation Objectives Supporting Document Version 1* (NPWS, 2012).
- *Irish Wetland Bird Survey: Waterbird Status and Distribution 2009/10-2015/16. Irish Wildlife Manuals, No. 106.* (Lewis et al., 2019) National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht, Ireland.

These reports have been reviewed to obtain desktop data on the proposed development site and its immediate surroundings with regards to its potential to support populations of overwintering birds.

Overwintering Bird Surveys

In addition, 8 overwintering bird surveys, specifically targeting Light-bellied Brent geese, were conducted on the Red Arches playing pitches and area of amenity grassland to the north of Red Arches Road on the following dates: 26th February and 6th, 8th, 12th, 15th, 21st, 23rd, 30th March 2019. Importantly, these surveys included two weekend dates (23rd and 30th March). Weekend surveys ensured that the survey schedule took cognisance of the different level of activity and associated disturbance, which the geese would be exposed to, and react to, on an average weekend day.

The aim of these surveys was to gain up to date information on the usage of the Red Arches playing pitches and area of amenity grassland to the north of Red Arches Road by Light-bellied Brent Geese. The survey also investigated whether any link existed between these two areas, e.g. if flocks of geese were disturbed at the Red Arches playing pitches did they fly over to the area of amenity grassland until such disturbance ceased, thereby indicating this areas significance as a supporting feature?

Two surveyors carried out the overwintering bird surveys with one surveyor being stationed at the Red Arches playing pitches and the second surveyor positioned on the area of amenity grassland to

[13] Overwintering bird surveys are, in this case, regarded as additional information required to inform the Appropriate Assessment (Stage 2) process

[14] I-WeBS Summary Tables contain summary population bird data for a range of bird species as recorded by I-WeBS volunteers over the course of the wintering bird season. I-WeBS is a joint scheme of Birdwatch Ireland and the National Parks & Wildlife Service (NPWS) which is coordinated by Birdwatch Ireland. This data was accessed online at www.birdwatchireland.ie in September 2019.

the north of Red Arches Road (see Figure 6 for clarity). The weather and wind speed were recorded for each survey.

Surveys began with a check of a known roosting site in Baldoyle Bay, close to the subject lands (see Figure 4). Roost checks were carried out close to dawn. Following on from this, the two surveyors covered the playing pitches at Red Arches and the area of amenity grassland to the north of this, respectively, until sunset. Any movements of geese or other wetland bird species were recorded and any geese which landed on either of the two survey sites were recorded. The duration that groups of geese spent at each survey site was noted, as was their behaviour. If ringed birds were present on either site, the ring code was recorded.

Where no geese were present on site, predefined transects were walked to detect signs of previous goose activity, such as droppings. Each transect comprised 10 recording stops. At each stop an area of $1m^2$ was examined for the following features:

- Number of goose droppings present;
- Average sward height;
- Percentage bare ground;
- Percentage grass cover; and;
- Percentage forb[15] cover.

In addition, at both sites surveyed, the nature of boundary features was recorded (e.g. presence of hedgerows or walls etc and height of same). The presence of tree species within the site was also recorded.

Disturbance events were recorded also. A description of the disturbance and the time at which it took place was noted. The intensity of the disturbance and the associated reaction was evaluated, as per the criteria noted in Appendix 10 (Disturbance Assessment) of the *Baldoyle Bay SPA Conservation Objectives Supporting Document* (NPWS, 2012) (see Table 4 for criteria used). Following completion of the survey, the frequency of disturbance events was assessed and scored (e.g. the frequency of disturbance events was assessed based on the number of times that disturbance (e.g. loose dog) was noted across the survey period). Each disturbance event was subsequently scored based on the cumulative score of the three aspects noted; frequency/ duration, intensity and response.

Table 4 Disturbance Assessment Criteria used during the overwintering bird surveys (Feb-March 2019).

Disturbance Assessment Criteria:						
Frequency/ Duration	**(A) Timing Score**	**Intensity[16]**	**(B) Scope Score**	**Response**	**Severity Score (C)**	**Total Individual Score**
Continuous	3	Active, High Level *e.g* mowing grass, loose dog	3	Birds leave the site and do not return for a period > 5mins	3	**Total Score (A)+(B)+(C)** Score 0-3 =

[15] A forb is a herbaceous flowering plant that is not a graminoid (grass, sedge or rush).

[16] Based on a combination of field survey observations and best expert opinion

Disturbance Assessment Criteria:						
Frequency/ Duration	**(A) Timing Score**	**Intensity[16]**	**(B) Scope Score**	**Response**	**Severity Score (C)**	**Total Individual Score**
Frequent (observed several times over survey period)	2	Medium Level *e.g* people walking with dog on lead in close proximity to geese	2	Birds are flushed from the site but return after a short period (within 5 mins) i.e. after disturbance has ceased	2	Low Scores 4-6 = Moderate Scores 7-9 = High
Infrequent (observed once or twice over survey period)	1	Low Level *e.g* solitary walker (no dog) walking around perimeter of site, not too close to bird's location	1	Most birds walk away from source of disturbance but remain in the site	1	
Rare (known to occur but not observed during survey period)	0	Very Low Level *e.g* activities which impart little effect on birds	0	Birds lift head and stop feeding	0	

6.3.2 Consultation

A consultation letter was issued to the Development Applications Unit (DAU) of the Department of Culture, Heritage and the Gaeltacht on the 17th February 2020. No formal response had been received at the time of finalising this report (mid-February 2020). BirdWatch Ireland were consulted via email by Hans Visser, Biodiversity Officer at Fingal County Council. No formal response was received at the time of writing.

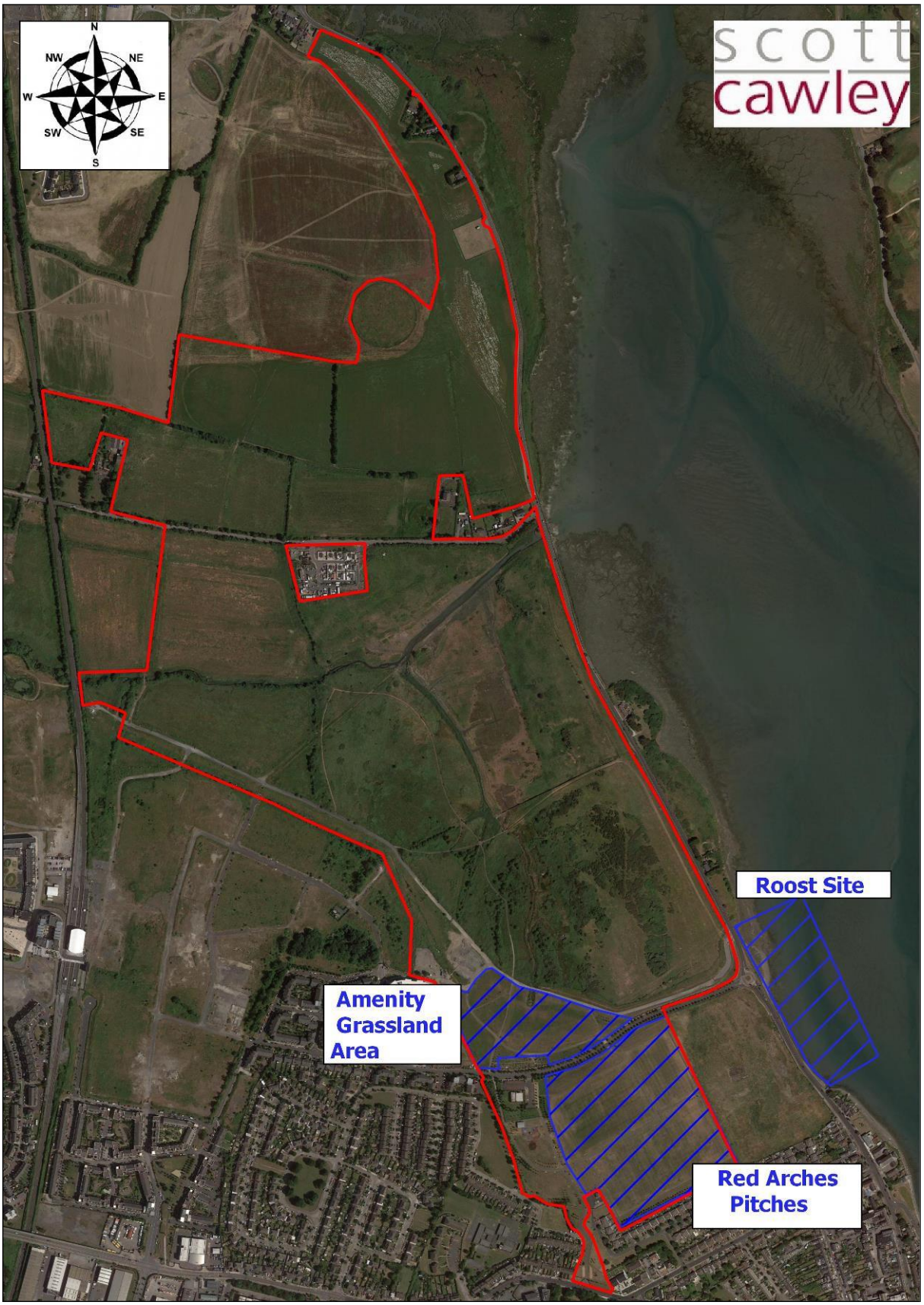
6.3.3 Limitations

Overwintering bird surveys undertaken in 2019 covered the last 5 weeks of the wintering bird season and, as such, do not reflect bird activity across the entire season. However, due to the availability and consideration of a wide range of desktop data in relation to the site's importance for Light-bellied Brent Geese this is not considered to be a significant limitation.

Whilst it is reasonable to consider whether the presence of a surveyor in close proximity to the birds may have disturbed the geese and, as such, impact upon the results of such surveys, it should be noted that the surveyor at all sites took all reasonable steps to avoid disturbing the birds by recording them from a distance using either binoculars or a telescope.

Re-sighting data was not received from the Irish Brent Goose Research Group (IBGRG) for ringed birds identified over the course of the 2019 surveys and as such no inferences could be made with regards to the association of ringed birds with particular SPAs in the greater Dublin Bay area.

Figure 6: Sites Surveyed (blue hatched) for Brent Geese during 2019 surveys, in relation to the overall site boundary (red line).



6.3.4 Results

Desktop Data

According to the Irish Wetland Bird Survey 2009/10-2015/16 (Lewis et al., 2019) the population of Light-bellied Brent Geese in Ireland is 30,295[17]. Of this, approximately 22,405 are associated with the SPA network. Historically the population of Light-bellied Brent Geese in Ireland has increased by 75.1%, with an increase of 96.1% over the past 20 years[18]. However, in the past 5 years the population has seen a decline of 15.5%[19].

With regards to the Light-bellied Brent Goose population associated with Baldoyle Bay SPA, the long-term population trend (for the period 1995/96- 2007/08) is an increase of 43.7%. Likewise, the short-term population trend (for the period of 2002/03- 2007/08) is an increase of 30% (NPWS, 2012).

Previous overwintering bird surveys were conducted by Nairn and Fox (2017) and Pierce and Dillion (2012). Surveys were carried out between November 2016 and April 2017 (Nairn and Fox, 2017) and recorded large flocks, sometimes in numbers of international importance, of Light-bellied Brent Geese in amenity grassland areas around Baldoyle estuary. The peak number of Light-bellied Brent Geese recorded during low tide surveys was 784, while the peak during high tide surveys was 1,072. The difference between the high tide and low tide peaks indicates that there is a high degree of interchange of geese with other grassland sites, as well as intertidal areas in Dublin Bay.

Light-bellied Brent Geese were among the most numerous waterbird species recorded in terrestrial sites during high tide surveys and areas identified as being of key significance included Seagrange Park and Red Arches Park. These geese fed in the central part of the Bay in the early part of the winter but from November to March they were increasingly foraging on inland grassland sites. When disturbed they frequently flew back to the Bay for refuge. No geese were recorded within the Baldoyle Racecourse Park area (to the north of Red Arches Road) during the 2016-2017 surveys, despite the fact that geese had been recorded foraging in the central area of the Racecourse lands during 2011-2012 surveys (Pierce and Dillon, 2012). The playing pitches on Red Arches Road regularly supported large flocks of Light-bellied Brent Geese during the 2016-2017 surveys. Birds were frequently disturbed here by walkers and dogs etc. but usually responded by walking away from the source of the disturbance.

According to a report prepared by Scott Cawley in 2017, the two sites surveyed as part of the overwintering bird surveys in 2019 (Red Arches playing pitches and amenity grassland to the north of Red Arches Road) are both regarded to be of "major" importance[20] for the Dublin Bay population of Light-bellied Brent Geese. A peak count of 580 geese was recorded by Scott Cawley for the playing pitches at Red Arches over the course of their 2017 surveys, while the overall peak count for the pitches in 2017 was 1,000. The highest count ever recorded here was 2,500. The peak count for the area of amenity grassland to the north of Red Arches Road was 455 for the period Jan- March 2017. The peak count for the same period of the previous year (2016) was 150 (Scott Cawley, 2017).

[17] Taken as the figure quoted for the Republic of Ireland population size (2011-2016)
[18] Based on a comparison of the population size from 1997 with that from 2017.
[19] Based on a comparison of the population size from 2012 to 2017.
[20] For a site to be considered as being of "major" importance for Light-bellied Brent Geese the site had to be known to support flocks of 401+ individual geese.

2019 Overwintering Bird Survey Results

Red Arches Playing Pitches

Geese were recorded on the playing pitches on Red Arches Road on seven of the eight survey visits, equating to 87.5% visits. The only survey visit where geese were not recorded was on the 6th March 2019. The highest peak count occurred on the 26th February with 800 geese recorded foraging on the pitches. The lowest peak was 62 which occurred on the 21st March. Goose numbers of international importance (i.e. >401 geese) were present on three survey visits: 26th February (800), 12th March (715) and 15th March (430). On the two weekend surveys (Saturday 23rd March and Saturday 30th March) peak counts were 234 and 120 respectively. It is important to note that the pitches were in use for matches etc for parts of these weekend survey visits and therefore there were long periods where no geese were present. Goose droppings were recorded during transect surveys on all survey visits, with an average of 5.7droppings/m^2. Interestingly, the average number of droppings decreased noticeably towards the end of the survey season with an average of 9.2 droppings/ m^2 recorded on the 26th February compared with an average of 3.7 droppings/ m^2 on the 30th March. This, combined with the lower peak counts, indicates that the pitches are used less frequently/ intensively by geese as the end of the wintering bird season approaches. No geese were recorded on the amenity grassland within the footprint of the proposed car park which lies in the most northern area of the pitches, adjacent to Red Arches Road. Droppings were observed within the footprint of the proposed car park on two occasions- the 12th and 15th March. On both occasions very few droppings were observed (average of 1.3 droppings/m^2 on the 12th March and 0.1 droppings/m^2 on the 15th March).

Disturbance events were recorded on all except one of the survey visits- the 21st March. The most disturbance events recorded over one survey period was 38, which occurred on the 8th March. Disturbance impacts ranged from high to low. High impact disturbances included the following: dogs chasing geese, dogs on leads, loose dogs, unknown disturbances and children running at flocks of geese. Moderate impact disturbances included dog walkers, loose dogs, cyclists, runners, dogs on leads, children running towards flocks of geese, dogs chasing geese, children kicking footballs, workers and van on pitches, line painting on pitches and seagulls swooping. Low impact disturbances mainly consisted of solitary walkers and runners. For most low and moderate impact disturbances the geese responded by walking away from the disturbance source. High impact disturbances usually resulted in geese leaving the site, either by flying east towards Baldoyle Bay or south towards Seagrange Park.

Amenity Grassland North of Red Arches Road

Light-bellied Brent Geese were only recorded in the area of amenity grassland once over the course of the surveys undertaken- a group of 30 geese landed very briefly (<30 seconds) on the site before flying north on the 15th March. These geese landed in the vicinity of the proposed skate park and MUGA. Geese were absent from the site for all other survey visits. However, geese were regularly seen flying over the site, both to and from Baldoyle Bay. Despite the fact that geese were only recorded once on the site over the course of the survey visits, goose droppings were present. Most droppings were concentrated on the brow of the slope, which would offer the best vantage point for vigilant birds whilst foraging. Dropping numbers were far less than for the playing pitches with an average of just 0.18 droppings/m^2. Low numbers of droppings were recorded in the vicinity of the proposed skate park and MUGA on 6 survey dates, with average number of droppings ranging from

0.1 droppings/m^2 to 2.7 droppings/m^2. No disturbance events were recorded in this area, but this was more on account of the lack of geese present. The site is used by dog walkers etc and therefore similar disturbance types would occur if geese were present.

Observations Regarding the Relationship between the two sites

Based on the results of the surveys carried out in February and March 2019, there does not appear to be any significant relationship between the two sites surveyed with respect to use by Light-bellied Brent Geese. The results do not suggest that geese move to the area of amenity grassland to the north of Red Arches Road when disturbed at the playing pitches. Rather, geese appear to fly back to Baldoyle Bay or south towards Seagrange Park when disturbed at the Red Arches playing pitches. There were no observations of geese flying between the two sites over the course of the surveys carried out in 2019.

Summary of Results with Regards to the Proposed Development

Based on the results of both the desktop study and the overwintering bird surveys carried out in 2019, the playing pitches at Red Arches are of international importance for Light-bellied Brent Geese associated with Baldoyle Bay SPA and a range of other SPAs which are designated for this species in the wider Dublin Bay area. In addition, the area of amenity grassland to the north of Red Arches Road is also known to support Light-bellied Brent Geese. The proposed development, in the absence of mitigation, has the potential to result in impacts on this species through loss of foraging habitat and disturbance impacts during construction which could lead to lower foraging success.

6.4 Appraisal of Potential Impacts on European sites

6.4.1 Potential Impact on European sites- Displacement of SCI Bird Species from Ex-situ Inland Feeding Sites

Light-bellied Brent Geese (a Qualifying Interest species for Baldoyle Bay SPA, North Bull Island SPA, Malahide Estuary SPA, Rogerstown Estuary SPA and South Dublin Bay and River Tolka Estuary SPA) are known to use areas of the proposed development site, namely the playing pitches at Red Arches and the area of amenity grassland to the north of Red Arches Road, as *ex-situ* inland feeding habitat. The playing pitches and area of amenity grassland are part of a network of inland feeding sites, of varying importance, which the geese use each year over the wintering bird season.

The proposed development will result in the displacement of geese from the area to the north of Red Arches Road which is known to be used by Light-bellied Brent Geese as an *ex-situ* inland feeding site. The proposal intends to accommodate a skate park and associated recreational activity facilities (e.g. MUGA) in the west of this area. The loss of this area as an *ex-situ* inland feeding site may in turn result in a reduction in the proportion of the existing foraging habitat in the Dublin area available to Light-bellied Brent Geese.

In addition, the proposal includes for the provision of a new car park to the north of the playing pitches at Red Arches. This area comprises the northernmost part of the playing pitches which lies adjacent to Red Arches Road and is not regularly used by foraging geese, possibly due to its proximity to the road. No geese were recorded within the footprint of the proposed car park during surveys undertaken here. Foraging geese tend to be found further south, towards the centre of the playing pitches rather than at the perimeter. The loss of this area is not deemed to be significant due

to the low usage of the area by foraging geese and the fact that post development the bulk of the playing pitches, which represents a substantial amount of suitable foraging habitat, will remain to the south of the proposed car park.

As noted in the supporting documentation for the conservation objectives of each of the five relevant European sites, the loss of an *ex-situ* feeding site of an SPA may have the potential to result in a reduction in their numbers within the SPA and as such, it is referred to as a factor that could potentially adversely affect the achievement of the conservation objectives "*to maintain the favourable conservation condition*" (NPWS, 2012).

The potential for these two conditions underpinning the site integrity of all five European sites (i.e. foraging habitat and food supply) to be impacted on due to the proposed development alone was examined as part of this assessment. This examination was carried out with respect to the conservation objectives' attributes "*population trend*" and "*distribution*" and their specific targets (listed in Table 3) for Light-bellied Brent Geese. The detailed findings of this assessment are presented below.

The target for the conservation objectives' attribute "*population trend*" for all five European sites is: "*long term population trend stable or increasing*" (as described in Table 3). As outlined in the supporting documentation for the conservation objectives of each of the five relevant European sites, the long-term population trend of Light-bellied Brent geese at each for the five relevant European sites is increasing over the periods of 1995/1996 to 2009/2010 (for North Bull Island SPA, South Dublin Bay and River Tolka Estuary SPA, Malahide Estuary SPA), 1995/1996 to 2007/2008 (for Rogerstown Estuary SPA) and 1995/1996 to 2007/2008 (for Baldoyle Bay SPA). The short-term trends vary somewhat between the five sites, *i.e.* declining at four of the five sites and increasing at one (Baldoyle Bay SPA). At present, the long-term trend is in line with the target for this conservation objective attribute.

The target for the conservation objectives' attribute of "*distribution*" for all five European sites is: "*no significant decrease in the range, timing and intensity of use of areas by…*" Light-bellied Brent geese "*…other than that occurring from natural patterns of variation*" (as described in Table 3). The distribution of Light-bellied Brent geese encompasses all foraging sites, both within intertidal and terrestrial habitats, and the roosting sites (NPWS, 2012).

The examination of the potential impact on the conservation objectives' attributes of "*population trend*" and "*distribution*" arising from the direct loss of a portion of the area of amenity grassland to the north of Red Arches Road as a result of the proposed development alone found the following:

- Based on the results of the overwintering bird surveys conducted by Scott Cawley in 2019, the amenity grassland to the north of Red Arches Road, which will be partly lost as a result of the proposed development, is only used occasionally by Light-bellied Brent Geese. Geese were only recorded on the lands for <30 seconds over the course of surveys undertaken between 26th February and 30th March 2019. Furthermore, data contained in a 2017 report (Scott Cawley, 2017) shows that the significance of the site seems to vary from year to year, with the site being deemed to be of "*moderate*" significance between January and March in 2016 (peak count = 150) and "*major*" significant for the same period in 2017 (peak count = 455). This indicates that the lands are of historical importance for Light-bellied Brent Geese, but have not been used consistently in recent years.

- The design of the proposed park includes for the provision of additional playing pitches in the west of the site. These proposed pitches will replace existing dry meadow habitat which are currently unsuitable for foraging geese. In this way the proposed park will enhance the potential habitat available to foraging geese and will in fact result in a net gain for foraging geese. The phasing proposed for the development of the park means that these additional pitches will be in place and completed prior to any works taking place in the area of amenity grassland to the north of Red Arches Road.
- Lands to the north of the Moyne Road are currently being successfully managed for foraging Light-bellied Brent Geese (See Section 2.1 for details of management and background). Foraging Light-bellied Brent Geese were recorded for the first time in these lands over the 2019-2020 winter bird season (Hans Visser, Biodiversity Officer, Fingal County Council, pers.comm.). The successful management of these lands for Light-bellied Brent Geese, as well as other wader species, has resulted in additional suitable *ex-situ* foraging resources being available to these species. Therefore, the displacement of foraging geese from the area of amenity grassland to the north of Red Arches Road, as a result of the proposed development, will not result in a significant impact on this SCI species due to the availability of suitable foraging habitat, of a much larger area, already in existence within the locality.

Therefore, the potential for adverse effects on site integrity to arise as a consequence of the proposed development negatively impacting on the conservation objectives' attributes of "*population trend*" and "*distribution*" alone was assessed and it was determined that there would be no impact on the population trend of Light-bellied Brent Geese at any of the five relevant European sites.

6.4.2 Potential Impact on European sites- Construction Related Disturbance Impacts on Light-bellied Brent Geese using Ex-situ Inland Feeding Sites

In the absence of mitigation, the proposed development has the potential to result in increased disturbance impacts on foraging Light-bellied Brent Geese over the course of the construction period. This is especially true for the playing pitches at Red Arches where it is proposed to create a new car park to the northernmost area of grassland, fronting onto Red Arches Road, and the area of amenity grassland to the north of Red Arches Road where a skate park is proposed.

According to a review of previous studies, carried out by the Institute of Estuarine and Coastal Studies (2009), birds may habituate to regular noise below 70dB during construction but irregular noise above 50dB may cause maximum disturbance to birds. Birds respond more severely to disturbance from people in greater numbers and therefore larger parties of construction personnel should retain a larger distance from foraging waterbirds than individual persons.

Construction in the playing pitches and area of amenity grassland at Red Arches would result in increased visual and noise disturbance which could lead to a reduced foraging success for geese during the winter bird season.

In the absence of mitigation, the proposed development has the potential for disturbance related impacts to result in negative effects on the conservation objectives of the five relevant SPA sites.

6.4.3 Potential Impact on European sites- Construction Related Surface Water Discharges

Accidental Pollution Incident during Construction

In the absence of mitigation, accidental spillages of oils, cement or other potential pollutants, during construction works could potentially be released into the Mayne River, Snugborough River, Maynetown Stream or Snugborough Stream and/or the existing surface water drainage network in the area and transferred into Baldoyle Bay.

Baldoyle Bay SAC

Qualifying Interest habitats for which Baldoyle Bay SAC is designated include the following; Mudflats and sandflats not covered by seawater at low tide [1140]; Salicornia and other annuals colonising mud and sand [1310]; Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]; and; Mediterranean salt meadows (*Juncetalia maritimi*) [1410]. These habitats are all found in estuaries and areas with a brackish influence and would be potentially at risk from an accidental pollution incident, if it was of sufficient magnitude and duration to significantly affect water quality in Baldoyle Bay.

The potential impact in the absence of mitigation would be a low risk of an adverse effect on site integrity from accidental fuel, oil or concrete spills, dependent on the magnitude of the pollution event.

Baldoyle Bay SPA

Qualifying Interest bird species of Baldoyle Bay SPA utilise the intertidal and estuarine habitats in Baldoyle Bay for feeding and/or roosting. These species would be vulnerable to an accidental pollution incident either directly e.g. through direct contact with oil or other polluting chemicals, or indirectly by affecting the habitats and food supply on which they rely for feeding and/or roosting within the Baldoyle Bay area.

The potential impact in the absence of mitigation would be a low risk of an adverse effects on site integrity from accidental fuel, oil or concrete spills, dependent on the magnitude of the pollution event.

Fugitive emissions into the SACs and SPAs in Baldoyle Bay

In the absence of mitigation, it is possible that silt-laden or otherwise contaminated runoff from the construction site could be released into the various watercourses which flow through the site and/or the existing surface water drainage network and transferred into Baldoyle Bay. Of particular relevance with regards this potential impact is the regrading and excavation works proposed within the boundary of the Baldoyle Bay SAC. These works have the potential to result in the release of silt and sediment into the River Mayne, which could be transferred to the outer area of Baldoyle Bay.

Baldoyle Bay SAC

All Qualifying Interest habitats for which Baldoyle Bay SAC is designated would be potentially at risk from run-off of sediment during construction of the proposed development, if it was of a sufficient quantity, magnitude and duration to significantly affect water quality in Baldoyle Bay.

The potential impact, in the absence of mitigation, would be a low risk of an adverse effects on site integrity from run-off of suspended solids or other contaminants, dependent on the quantity, magnitude and duration of the silt release.

Baldoyle Bay SPA

Qualifying Interest bird species of Baldoyle Bay SPA could utilise the intertidal and estuarine habitats in Baldoyle Bay for feeding and/or roosting. These species would be vulnerable to the effects of an increase in run-off of sediment indirectly by affecting the habitats and food supply on which they rely for feeding and/or roosting within the Baldoyle Bay area.

The potential impact in the absence of mitigation would be a low risk of an adverse effects on site integrity from run-off of suspended solids or other contaminants, dependent on the quantity, magnitude and duration of the silt release.

6.4.4 Potential Impact on European sites- Construction Related Spread of Invasive Species Material

In the absence of mitigation, there is potential for construction related activities such as earthworks, regrading, landscaping and excavations to exacerbate the spread of invasive species both within and outside the proposed development site. There is potential that, through these activities, invasive plant material could be spread to downstream European sites such as Baldoyle Bay SAC.

Baldoyle Bay SAC

All Qualifying Interest habitats for which Baldoyle Bay SAC is designated would be potentially at risk from the spread of invasive species during construction.

The potential impact, in the absence of mitigation, would be a moderate risk of an adverse effects on site integrity from the spread of invasive species.

6.4.5 Potential Impact on European sites- Operation Related Disturbance Impacts on Light-bellied Brent Geese

The playing pitches at Red Arches are known to be valuable foraging resources for overwintering bird species, especially Light-bellied Brent Geese, associated with Baldoyle SPA and other SPAs in the wider Dublin Bay area. However, their value as a wintering ground could be reduced by disturbance from human activities such as dog walking. The proposed provision of an additional car park in the northernmost part of the existing Red Arches playing pitches site could result in increased disturbance to foraging geese during the car parks operation.

Waterbirds in Dublin Bay are managing to coexist alongside high levels of human activity but are exposed to levels of disturbance likely to affect their survival during periods of stress (Nairn & Phalan, 2007). Sustained and widespread disturbance has a significant impact on birds' foraging success, energetic costs, use of feeding and roosting sites and may ultimately result in population declines. A wide variety of human activities are known to cause disturbance, but their effects on birds depend on their nature, frequency and extent. People walking their dogs can affect feeding and roosting birds and, due to the fact that many estuaries are used by dog walkers, this activity has the potential to affect a large proportion of the wintering populations of many waterbirds. In addition, it should be noted that the upper levels of tidal mudflats provide most food to waterbirds as they are exposed for longest, but these areas are also the most affected by human activity.

A study conducted by Natura Environmental Consultants on waterbirds and disturbance events at Irishtown in South Dublin Bay found that the presence of dogs had a more marked effect on waterbirds than all other disturbance types. Most disturbance events were caused by people or dogs moving off the paths and onto the beach or fields and while most people and dogs stayed on designated paths adjacent to these features, the minority who left the paths caused an above average amount of disturbance to waterbirds. Of all the waterbirds surveyed, Brent Geese spent the longest time in flight following disturbance, and also reacted in larger groups than wader species. This is probably due to the fact that Brent Geese tend to feed together in large flocks and react in unison. Brent Geese also lost the most feeding time to disturbance than other species. The costs of responding to disturbance may include physiological stress, reduced foraging success as a result of vigilance, in addition to the energy costs of lost feeding time and flying away. It is important to note that this study also found that most birds feeding in their study area generally seemed to be habituated to people, dogs and vehicles which moved predictably along paths and were most susceptible to disturbance from people leaving the paths to go onto the fields and beach, where they could potentially come into closer contact (Nairn & Phalan, 2007).

In general, the greater the number of people visiting a site, the greater the impact on birds is likely to be. However, given the results of the study in South Dublin Bay, an increase in recreational use need not be accompanied by a corresponding increase in disturbance, if some form of visitor management can reduce the small proportion of visitors who behave in ways which are likely to disturb birds (Nairn & Phalan, 2007).

With regards the proposed development and the provision of a car park in the northernmost part of the existing Red Arches playing pitches site, in the absence of mitigation, this has the potential to result in increased disturbance to foraging geese. The provision of a car park so close to the pitches could result in an increase in the number of people and dogs who run directly onto the pitches from this area, disturbing any foraging geese, thereby having a negative effect on the conservation objectives of the five relevant SPAs.

6.5 Mitigation Measures

The mitigation measures which will be implemented are presented in this section of the report. Any residual impacts from the proposed development with respect to the European site are also assessed in this section of the report providing conclusions on whether these would adversely affect the integrity of the site. The assessment of the proposed development in-combination with any other plans or projects on European sites is presented in Section 7.

6.5.1 Mitigation Measures to address Construction related Disturbance Impacts on Light-bellied Brent Geese using Ex-situ Inland Feeding Sites

Specific and detailed mitigation measures have been proposed to address the potential adverse effects that may arise from construction-related disturbance impacts on Light-bellied Brent Geese as a result of the proposed development (described in Section 6.4.2) as outlined below.

- Construction activities associated with the proposed car park at Red Arches playing pitches will be restricted to the period May- August (inclusive) so as to avoid construction related disturbance to foraging geese (which are only winter visitors).

- Likewise, construction activities associated with the proposed skate park in the area of amenity grassland to the north of Red Arches Road will be restricted to the period May-August (inclusive).

- If the above measures cannot be complied with, due to an incompatible project program, then a visual screen will be erected around the perimeter of construction works on the pitches or amenity grassland area, to avoid visual disturbance to foraging geese.

It is the professional opinion of the authors that the mitigation measures outlined above, when implemented in full, will ensure that no adverse effects on the conservation objectives of the five relevant SPA sites will arise during the construction stage of the proposed development.

6.5.2 Mitigation Measures to address Construction Related Surface Water Discharges

Specific and detailed mitigation measures have been proposed to address the potential adverse effects that may arise from construction-related surface water discharges from the proposed development (described in Section 6.4.3) as outlined below.

The construction contractor will be required to implement the following specific mitigation measures, for release of hydrocarbons, polluting chemicals, sediment/silt and contaminated waters control:

- Specific measures to prevent the release of sediment over baseline conditions to the Mayne River, Snugborough River, Maynetown Stream and Snugborough Stream (and subsequently Baldoyle Bay) during the construction work, which will be implemented as the need arises. These measures include, but are not limited to, the use of silt traps, silt fences, silt curtains, settlement ponds and filter materials. This is particularly important when undertaking any works/upgrading to the surface and foul water drainage networks at the proposed development site.
- Provision of exclusion zones and barriers (*e.g.* silt fences) between earthworks, stockpiles and temporary surfaces to prevent sediment washing into any of the watercourses on site and/or existing drainage systems and hence the downstream receiving water environment.
- Silt traps will not be constructed immediately adjacent to the existing watercourses, *i.e.* a buffer zone between the trap and the watercourse with natural vegetation must be left intact. Imported materials such as terram, straw bales, coarse to fine gravel will be used either separately or in-combination as appropriate to remove suspended matter from discharges.
- Provision of temporary construction surface drainage and sediment control measures to be in place before the construction of any pipeline and/or earthworks commence.
- Weather conditions will be taken into account when planning construction activities to minimise risk of run-off from the site.
- Prevailing weather and environmental conditions will be taken into account prior to the pouring of cementitious materials for the works adjacent to any of the watercourses on site and/or surface water drainage features, or drainage features connected to same. Pumped concrete will be monitored to ensure no accidental discharge. Mixer washings and excess concrete will not be discharged to any watercourses or existing surface water drainage systems. Concrete washout areas will be located remote from any watercourses or any surface water drainage features, where feasible, to avoid accidental discharge to watercourses.
- Any fuels or chemicals (including hydrocarbons or any polluting chemicals) will be stored in a bunded area to prevent any seepage of same into any of the watercourses, local surface

water network or groundwater, and care and attention will be taken during refuelling and maintenance operations.

- Temporary oil interceptor facilities shall be installed and maintained where site works involve the discharge of drainage water to receiving rivers and streams. Works where this may be applicable include the removal of the existing outfall and creation of extended reed bed area in the vicinity of the River Snugborough; the creation of brackish grassland habitat to the north of the River Mayne; and; the installation of culverts in drainage ditches to the north of the construction road and cycle path.
- All containment and treatment facilities will be regularly inspected and maintained.
- All mobile fuel bowsers will carry a skill kit and operatives must have spill response training. All fuel containing equipment such as portable generators will be placed on drip trays. All fuels and chemicals required to be stored on-site will be clearly marked.
- Implementation of response measures to potential pollution incidents.
- Emergency procedures and spillage kits will be available and construction staff will be familiar with emergency procedures in the event of accidental fuel spillages.
- All trucks will have a built-on tarpaulin that will cover excavated material as it is being hauled off-site and wheel wash facilities will be provided at all site egress points.
- Water supplies shall be recycled for use in the wheel wash. All waters will be drained through appropriate filter material prior to discharge from the construction sites.
- The removal of any made ground material, which may be contaminated, from the construction site and transportation to an appropriate licenced facility will be carried out in accordance with the Waste Management Act, best practice and guidelines for same.
- A discovery procedure for contaminated material will be prepared and adopted by the appointed contractor prior to excavation works commencing on site. These documents will detail how potentially contaminated material will be dealt with during the excavation phase.
- Implementation of measures to minimise waste and ensure correct handling, storage and disposal of waste (most notably wet concrete, pile arisings and asphalt).

In addition to the above, the following measure will also be applied:

- Any works in close proximity to watercourses will be restricted to taking place during the summer period only (May- August (inclusive)), when weather is drier. This is to avoid sediment and other harmful materials being transferred to watercourses, and subsequently to downstream European sites, by precipitation and surface waters flowing overland. In addition, this measure will help to ensure the early re-colonisation of any cleared areas by opportunistic plants, which will help to bind soil together and prevent any further transfer of sediment. Proposed pond/pool creation works and preparatory works for proposed playing pitches to the north of the River Mayne (e.g. vegetation clearance and regrading) will abide by this measure.

It is the professional opinion of the authors and design team that the mitigation measures outlined above when implemented in full will ensure that no adverse effects on the European sites will arise during the construction stage of the proposed development or as a consequence of run-off of sediment/silt or contaminated waters into any of the watercourses present on site during the construction stage of the proposed development.

6.5.3 Mitigation Measures to address Potential Construction Related Spread of Invasive Species Material

The following measures are proposed to address the potential adverse effects which may arise from the potential spread of invasive species through construction-related activities (described in Section 6.4.4):

- Prior to any works commencing on site any areas of invasive species will be clearly demarcated and an exclusion zone around these areas will be established.
- All contractors on site will be given a toolbox talk in relation to the invasive species present on site and the biosecurity risks associated with them. Biosecurity protocols/procedures to be employed while working on site will be clearly conveyed to all contractors in advance of any works commencing.
- All invasive species listed on the Third Schedule of the Birds and Natural Habitats Regulations (2011), will be eradicated prior to any other works commencing in affected areas.
- An Invasive Species Management Plan (ISMP) will be prepared to inform the contractor on how to deal with invasive species within the construction site. The ISMP will clearly outline the control methods to be employed for each Third Schedule invasive species recorded on site. A suitably qualified contractor, with experience in dealing with invasive species, will be employed to execute the ISMP. This ISMP will be lodged with the relevant authority.
- The site will be monitored for the presence of invasive species for a period of 3 years post development. Any subsequent regrowth of invasive species will be treated accordingly by a suitably qualified contractor, following best guidance.

6.5.4 Mitigation Measures to address Operation Related Disturbance Impacts on Light-bellied Brent Geese

Specific and detailed mitigation measures have been proposed to address the potential adverse effects that may arise from operation-related disturbance impacts on Light-bellied Brent Geese as a result of the proposed development (described in Section 6.4.5) as outlined below.

The study by Natura Environmental Consultants (Nairn and Phalan, 2007), states that initiatives which aim to minimise contact between dogs and waterbirds would be the most effective way of reducing disturbance. Such initiatives include:

- good design and maintenance of paths to encourage people to use them;
- unobtrusive barriers to prevent dogs running onto intertidal areas;
- provision of alternative areas for dog-walking and other pursuits;
- zoning important feeding and roosting areas as “dog-free” during sensitive times of the year; and;
- public education to encourage people to keep dogs on a leash in areas where they could disturb birds.

The design of the proposed park development has already included some of these items- a dog park is provided, and the wider park area will be provided with paths for people walking dogs and other recreational activities. Nevertheless, the following mitigation measures are proposed:

- The proposed car park in the northernmost part of the existing playing pitches at Red Arches, has been designed so as to lead visitors from the car park to a designated entrance to the playing pitches, located to the south-west of the proposed car park. This is to ensure that people use a defined entrance as opposed to simply running onto the pitches from any location in the car park. Furthermore, screen planting and fencing has been provided around the perimeter of the car park to ensure that loose dogs cannot simply run onto the pitches from the car park.
- The playing pitches and potentially the other areas in the wider park which are to be managed for geese will be zoned as "dog-free" for the winter bird season (September – April) and signs will be erected to convey this message to the public. These signs will also act as a means of public education to describe how disturbance such as loose dogs can impact geese.
- It will be park policy that all dogs must be kept on a lead at all times while in the park, with the exception of the dog park. This will be implemented by a by-law (see Fingal County Council's *Regional Parks & Open Spaces Bye-Laws 2017* (Fingal County Council, 2017a) for details) and enforced by Fingal County Council Park Rangers who will monitor the park.

It is the professional opinion of the authors that the mitigation measures outlined above, when implemented in full, will ensure that no adverse effects on the conservation objectives of the five relevant SPA sites will arise during the operational stage of the proposed development.

6.6 Residual Impacts

Following adoption of all mitigation measures outlined in Section 6.5, none of the potential impacts of the proposed development will result in any perceptible residual effect on the receiving environment.

7 IN-COMBINATION ASSESSMENT

7.1 Analysis of Potential In-Combination Effects

This section of the report presents the assessment carried out to examine whether any other plans or projects have the potential to act in combination with the proposed development to adversely affect the integrity of Baldoyle Bay SPA, South Dublin Bay SAC, North Dublin Bay SAC, South Dublin Bay and River Tolka Estuary SPA, North Bull Island SPA and Malahide Estuary SPA. All other European sites fall beyond the zone of influence 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.

7.1.1 Zoning and Future Development in the Area

According to a detailed review of the Fingal County Development Plan 2017-2023, lands immediately surrounding the proposed public park site fall within the following land zonings:

Zoning	Objective
Residential Area[21]	Provide for new residential communities subject to the provision of the necessary social and physical infrastructure
High Amenity	Protect and enhance high amenity areas
Greenbelt	Protect and provide for a Greenbelt
Residential	Provide for residential development and protect and improve residential amenity
Open Space	Preserve and provide for open space and recreational amenities

It should also be noted that the Fingal County Development Plan 2017-2023 also identifies lands around Baldoyle estuary as ecological buffer zones: "*These buffer zones protect the ecological integrity of the nationally and internationally designated sites by providing suitable habitat for key species such as birds, by providing for compatible landuses around the designated sites, and in the case of the freshwater wetland areas, by ensuring a steady supply of clean groundwater and surface water. Around the estuaries the buffer zones can also provide for recreational uses and are also important for coastal flood protection and for climate change adaptation. Ecological buffer zones are areas where agricultural uses may be combined with nature conservation and low-intensity recreational use such as walking and cycling. The Council will normally only grant permission where it is clearly demonstrated that a proposal will have no significant adverse impact on the habitats and species of interest in the buffer zone and its ecological functions*" (Fingal County Council, 2017).

[21] It should be noted that the two areas which border the proposed public park site and which fall into this zoning category are subject to a Local Area Plan (LAP)

Furthermore, Objective NH18 states that it is an objective of the Council to "*Protect the functions of the ecological buffer zones and ensure proposals for development have no significant adverse impact on the habitats and species of interest located therein*".

The ecological significance of the Baldoyle area is acknowledged in the Fingal County Development Plan and several protective objectives, in relation to the area, are provided:

Objective Number	Objective Text
Objective BALDOYLE 1	Protect the visual break and open character of lands between Baldoyle and Portmarnock by maintaining the greenbelt lands and appropriate recreational uses on Racecourse Park which respect the character, sensitivity and natural heritage designations of the existing landscape.
Objective NH19	Develop Ecological Masterplans for the Rogerstown, Malahide and Baldoyle Estuaries focusing on their ecological protection and that of their surrounding buffer zones.

In addition, much of the surrounding lands are contained within the Baldoyle- Stapolin LAP and Portmarnock South LAP areas and are subject to the policies and objectives contained within the respective LAPs. Several policies/ objectives which are protective in nature are included in these LAP's. These policies/objectives assist in protecting nearby European sites and, in some cases, ensure that development applications in the area do not result in likely significant effects/ adverse impacts on European sites by explicitly stating the need for such developments to demonstrate the Appropriate Assessment process e.g. Objective GI6 in the Portmarnock South LAP reads "*Require Appropriate Assessment (AA) Screening for any development, plan or project including changes to the landscape, within the Ecological Buffer Zone. This will include any changes to existing or future layout, materials or management*".

The Fingal County Development Plan also contained protective policies/ objectives e.g. Objective NH10: "*Ensure that the Council takes full account of the requirements of the Habitats and Birds Directives, as they apply both within and without European Sites in the performance of its functions*" and Objective NH15: "*Strictly protect areas designated or proposed to be designated as Natura 2000 sites (i.e. Special Areas of Conservation (SACs) and Special Protection Areas (SPAs); also known as European sites) including any areas that may be proposed for designation or designated during the period of this Plan*".

Any developments within the boundary of the Baldoyle- Stapolin LAP, Portmarnock South LAP and Fingal County Development Plan, must adhere to these protective policies and demonstrate compliance with same. In this way, any future plans/projects, which could potentially result in cumulative impacts with the proposed public park, will have to demonstrate that they will not result in adverse impacts on European sites. Therefore, these protective policies prevent cumulative impacts arising and as such, cumulative impacts as a result of zoning and future development can be excluded.

7.1.2 Increased Visitor Pressure/ Tourism

Increased visitor pressure, as a result of increased recreational use or tourism impacts on the surrounding area, have the potential to act cumulatively with the proposed public park to negatively

impact the QI habitats and SCI species of nearby European sites. As demonstrated in Section 6.5.3 the proposed public park will not result in any disturbance impacts on SCI bird species due to the mitigation measure proposed. However, existing or future plans/ projects could result in impacts to SCI bird species through increased visitor pressure.

The provision of the proposed Racecourse Park is part of a strategy to assist in maintaining the conservation condition of Baldoyle Bay SAC and Baldoyle Bay SPA, by providing an alternative area for recreational activities, thereby reducing recreational pressures on the adjacent SAC and SPA. The park will also minimize the impacts of adjacent residential developments. Objective GI 12 of the Baldoyle- Stapolin Local Area Plan (Fingal County Council, 2013a) states that it is an objective of the Plan to "*provide appropriately designed and located combined pedestrian and cycle routes of no wider than 3m through Racecourse Park, and minimise access points to avoid disturbance to protected habitats and species within Baldoyle Bay and Racecourse Park*". This objective is also detailed in Section 5.5.3 of the Portmarnock South Local Area Plan (Fingal County Council, 2013b) which states that "*to relieve the potential amenity pressures away from the Natura 2000 site of Baldoyle Bay, a series of looped walks are proposed within the plan area based on the proposed green routes. A summertime walking loop is proposed through the open space lands when migratory estuarine birds are not resident… These routes extend beyond the confines of the LAP lands offering attractive walking routes to include Racecourse Park South and onwards to Baldoyle*".

The Coastal Pathway, a greenway linking Baldoyle to Portmarnock, was granted planning permission in July 2018. With respect to increased visitor pressure, particularly in the case of a known feeding site at Portmarnock Green which could potentially be impacted upon in this regard, the Natura Impact Statement (NIS) prepared for this planning application concluded that "*given the observable tolerance shown by Light-bellied Brent Geese for predictable and repeated patterns of disturbance (where the disturbance remains remote and does not enter the feeding area), it is not anticipated that the increased level of pedestrian and cyclist use of the path should negatively impact on use of the site by Light-bellied Brent Geese*" (Atkins, 2018).

The Baldoyle- Stapolin LAP includes a protective measure which aims at ensuring that increased visitor numbers and increase recreational use of LAP lands does not result in an adverse impact on SCI species or QI habitats of nearby European sites. Objective GI31 states that it is an objective of the Council to "*promote sustainable recreation within the LAP lands that will allow inclusive use of the open space without causing adverse effects on the physical and biological functions of the green infrastructure and/or qualifying interest species and habitats of European sites*". Any proposals in the area governed by the Baldoyle- Stapolin LAP will need to demonstrate compliance with this objective. Therefore, cumulative impacts on European sites, through increased visitor pressure, can be excluded on this basis.

7.1.3 Permitted/ Potential Developments

According to a review of the Fingal County Council's Online Planning Application Map Viewer[22], there are several permitted and potential developments, of varying scales, in close proximity to the proposed public park site.

[22] Fingal County Council's Online Planning Application Map Viewer. Available at: https://fingalcoco.maps.arcgis.com/apps/webappviewer/index.html?id=3fa7d9df584c4d93aab202638db9dd1a [Accessed 19/02/2021]

Permission (Reg. Ref. F14A/0109), consequent to grant of outline permission (Reg. Ref. F10A/0328), has been granted for the development of a retirement home and hotel, and all associated infrastructure and services, on lands to the east of the Red Arches playing pitches. An Bord Pleanála granted permission for this proposal in 2015 (ABP Ref: PL06F.243832). The NIS submitted with the application concluded that the proposed development would not result in any adverse effect on Light-bellied Brent Geese or any other QI/SCI for any European sites.

Irish Water has applied for planning permission for a new wastewater pumping station, and all associated infrastructure at Station Road, Portmarnock, to the north-east of the proposed public park site (Planning Register Ref: F19A/0400). Elements of the proposed infrastructure for this development (i.e. sewers), if granted, would run through the north of the proposed public park site. The NIS submitted as part of this application concluded that the proposed development would not result in any adverse effects on Light-bellied Brent Geese or impacts on water quality or QI habitats of nearby European sites, if the mitigation measures prescribed were implemented correctly. Construction phase impacts on geese would be limited to temporary impacts on foraging geese as a result of disturbance during construction. However, it was argued that any affected foraging geese would simply be displaced to other suitable foraging resources present in the locality (Mott MacDonald, 2019). Additional information was requested in relation to this application in October 2019 which was received in April 2020. The applicant was granted planning permission by Fingal County Council in June 2020. Subsequently an appeal to this decision was lodged with An Bord Pleanála in July 2020. An Bord Pleanála refused permission for this proposal in December 2020 (ABP Ref: PL06F.307641) based on the view that the proposed development would not give rise to an increased risk of flooding on the site or property in the vicinity.

There are a number of permitted residential developments in close proximity to the proposed public park site. Many of these developments received extensions of durations from Fingal County Council in recent years (e.g. Planning Reg. Ref: F03/1162/E3 and Planning Reg. Ref: F15A/0074). Other permitted residential developments in the area include the permitted development of 385 apartments, 161 houses and 1,917m^2 of commercial floorspace (ABP Ref: PL06F.248970). The An Bord Pleanála Inspector's Report states that the proposed development would not be likely to give rise to significant effects alone or in combination with other developments in the area.

Irish Water received planning permission from An Bord Pleanála for the Greater Dublin Drainage (GDD) Project in north Dublin in November 2019. The project will include the installation of an underground pipeline from Blanchardstown to a new wastewater treatment plant at Clonshaugh. The treated effluent will then be returned safely to the Irish Sea via a 6km marine outfall pipeline from Baldoyle to a point 1km north of Ireland's Eye. The An Bord Pleanála Inspector's Report states that the Inspector was satisfied that the mitigation measures for Baldoyle Bay SPA would not result in significant residual impacts and that the proposed development, individually or in combination with other plans or projects, would not adversely affect the integrity of any European sites. However, An Bord Pleanála's decision to grant permission for this project was quashed by the High Court in November 2020 due to a failure to seek observations from the Environmental Protection Agency on likely impacts of the proposed development on wastewater discharges.

Fingal County Council intend to upgrade the existing traveller accommodation on the Moyne Road in the near future (Hans Visser pers. comm.). Given the site's location within the Baldoyle- Stapolin LAP area, any proposed upgrades will be subject to Appropriate Assessment, which will include an

assessment of the proposed upgrades potential to result in significant cumulative impacts on nearby European sites.

7.2 Conclusion for the In-Combination Assessment

As assessed in Section 6, none of the potential impacts associated with the proposed development will result in any perceptible residual effect on the receiving environment or on the qualifying interests/special conservation interests of Baldoyle Bay SPA, South Dublin Bay SAC, North Dublin Bay SAC, South Dublin Bay and River Tolka Estuary SPA, North Bull Island SPA and Malahide Estuary SPA. Therefore, there will not be any residual impacts associated with the proposed development that will adversely affect the conservation objectives supporting the conservation condition of the qualifying interests of those European sites, and the proposed development, in isolation, will not adversely affect the integrity of those European sites.

As the proposed development itself will not have any effects on the conservation objectives of any European sites, and considering the mitigation measures described in Section 6, as well as the detailed assessments above, there is no potential for any other plan or project to adversely affect the integrity of any European sites in combination with the proposed development.

8 CONCLUSIONS ON THE STAGE 2 APPROPRIATE ASSESSMENT PROCESS

This NIS has examined and analysed, in light of the best scientific knowledge, with respect to the European sites contained within the ZoI of the proposed development, the potential impact sources and pathways, how these could impact on the relevant European sites' qualifying interest habitat and qualifying interest species and whether the predicted impacts would adversely affect the integrity of the European site.

Avoidance, design requirements and mitigation measures are set out within this report and they ensure that any impacts on the conservation objectives of the European site will be avoided during the construction and operation of the proposed development such that there will be no adverse effects on this European site.

It has been objectively concluded by Scott Cawley Ltd., following an examination, analysis and evaluation of the relevant information, including in particular the nature of the predicted impacts from the proposed development and with the implementation of the mitigation measures proposed, that the proposed development will not adversely affect (either directly or indirectly) the integrity of any European site, either alone or in-combination with other plans or projects, and there is no reasonable scientific doubt in relation to this conclusion.

REFERENCES

Atkins (2018). *Baldoyle to Portmarnock Pedestrian & Cyclist Scheme Natura Impact Statement*. Prepared for Fingal County Council. 19 January 2018.

BSLA (2021). *Racecourse Park Masterplan Design Report*. March 2021

CIEEM (2018). *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine.* 2nd edition.

Colhoun, K. & Cummins, S. (2013) *Birds of Conservation Concern in Ireland 2014 -2019*. Irish Birds 9: 523-544.

Council of the European Communities (1992) *Council Directive of 21 May 1992 on The Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC).* O. J. L 206/35, 22 July 1992.

Birdwatch Ireland (2019). *Irish Wetland Bird Survey (I-WeBS) Site Summary Table for 0U403 Baldoyle Bay*

DoEHLG (2010) *Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities* (Department of Environment, Heritage and Local Government, Rev Feb 2010).

DoCHG (2017) *National Biodiversity Action Plan 2017-2021*.

DHPCLG (2017) *River Basin Management Plan for Ireland 2018-2021.*

European Commission (EC) (2000). *Communication from the Commission on the precautionary principle.*

European Commission (EC) (2001). *Assessment of Plans and Projects Significantly Affecting Natura 2000 sites: Methodological Guidance on the Provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC* (European Commission Environment Directorate-General).

European Commission (EC) (2007). *Guidance Document on Article 6(4) of the 'Habitats Directive' 92/43/EEC. Clarification of the Concepts of Alternative Solutions, Imperative Reasons of Overriding Public Interest, Compensatory Measures, Overall Coherence.* Opinion of the European Commission.

European Commission (EC) (updated draft April 2015). *Managing Natura 2000 sites: The Provisions of Article 6 of the Habitat's Directive 92/43/EEC* (European Commission Environment Directorate-General).

European Parliament and European Council (2009). *Directive 2009/147/EC of 30th November 2009 on the Conservation of Wild Birds (2009/147/EC).* O.J. L20/7, 26th January 2010.

Fingal County Council (2013a). *Baldoyle – Stapolin Local Area Plan*. May 2013.

Fingal County Council (2013b). *Portmarnock South Local Area Plan*. July 2013.

Fingal County Council (2017). *Fingal Development Plan 2017-2023*

Fingal County Council (2017a). *Fingal County Council Regional Parks and Open Spaces Bye-Laws 2017 - Bye-Laws Regulating Regional Parks, Open Spaces and Recreational Playing Grounds Owned, Controlled by or in the Charge of Fingal County Council*

Fingal County Council (2013). *Baldoyle- Stapolin Local Area Plan 2013 – 2019*

Fitzgerald, A. (2017). *Vegetation Study of Baldoyle Racecourse Park, Co. Dublin*. Report for Fingal County Council.

Government of Ireland (2011). *Birds and Natural Habitats Regulations (2011).*

Institute of Estuarine & Coastal Studies (2009). *Construction and Waterfowl: Defining Sensitivity, response, Impacts and Guidance.* Report to Humber INCA. Institute of Estuarine and Coastal Studies, University of Hull.

Lewis, L. J., Burke, B., Fitzgerald, N., Tierney, T. D. & Kelly, S. (2019). *Irish Wetland Bird Survey: Waterbird Status and Distribution 2009/10-2015/16.* Irish Wildlife Manuals, No. **106**. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht, Ireland.

Mott MacDonald (2019). *Local Network Reinforcement Project- Natura Impact Statement for Portmarnock South Pumping Station.* Prepared for Irish Water. August 2019.

Nairn,R.G.W & Phalan, B. (2007) *Disturbance to waterbirds in South Dublin Bay.* Irish Birds. **8**. pgs: 223-230.

Nairn, R., Fox, J. (2017). *Winter bird study of lands around Baldoyle Bay 2016-2017*. Report to Fingal County Council from Natura Environmental Consultants. Wicklow.

NPWS (2010). Circular NPW 1/10 & PSSP 2/10 *Appropriate Assessment under Article 6 of the Habitats Directive: Guidance for Planning Authorities.* (Department of Environment, Heritage and Local Government, March 2010).

NPWS (2012). *Baldoyle Bay Special Protection Area (Site Code 4016) Conservation Objectives Supporting Document Version 1* December 2012

NPWS (2013). *Petalophyllum ralfsii (Wils.) Nees & Gottsche (Petalwort) in the Republic of Ireland: Article 17 Report Backing Document 2013.*

NPWS (2017a). *Natura 2000 – Standard Data Form Baldoyle Bay SAC 000199*

NPWS (2017b). *Natura 2000 – Standard Data Form Baldoyle Bay SPA 004016*

NPWS (2017c). *Natura 2000 – Standard Data Form North Bull Island SPA 004006*

NPWS (2017d). *Natura 2000 – Standard Data Form Malahide Estuary SPA 004025*

NPWS (2017e). *Natura 2000 – Standard Data Form Rogerstown Estuary SPA 004015*

NPWS (2017f). *Natura 2000 – Standard Data Form South Dublin Bay and River Tolka Estuary SPA 004024*

NPWS (2019). *Status of EU Protected Habitats and Species in Ireland. Volume 2: Habitat Assessments.* Unpublished Report, National Parks & Wildlife Services. Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.

NRA (2009). *Environmental Guidelines Series for Planning and Construction of National Roads.* National Roads Authority.

Pierce, S., Dillon D. (2012). *Winter bird survey of the lands surrounding the Baldoyle Estuary*. Unpublished report to Fingal County Council. Birdwatch Ireland. Fingal Branch.

Scott Cawley (2017). *Natura Impact Statement- Information for Stage 2 Appropriate Assessment. Proposed Residential Development, St. Paul's College, Sybil Hill Road, Raheny, Dublin 5*

Scott Cawley (2020). *Ecological Impact Assessment for a Proposed Public Park at Baldoyle Racecourse Park, Baldoyle, Dublin 13*

Wintering Bird Survey Report

Baldoyle Racecourse Park, Baldoyle

Prepared for Fingal County Council

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This report has been prepared by Scott Cawley Ltd. in accordance with the particular instructions and requirements of our agreement with the Client, the project's budgetary and time constraints and in line with best industry standards. The methodology adopted and the sources of information used by Scott Cawley Ltd. in providing its services are outlined in this report. The scope of this report and the services are defined by these circumstances.

Where the conclusions and recommendations contained within this document are based upon information provided by others than Scott Cawley Ltd., no liability is accepted on the validity or accuracy of that information. It is assumed that all relevant information has been provided by those parties from whom it has been requested and that the information is true and accurate. No independent verification of any documentation or information supplied by others has been made.

The conclusions presented in this report represent Scott Cawley Ltd.'s best professional judgement based on review of site conditions observed during the site visit (if applicable) and the relevant information available at the time of writing. Scott Cawley Ltd. has used reasonable skill, care and diligence in compiling this report and no warranty is provided as to the report's accuracy.

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Appendix I – Desk Study Results

Appendix II – Results of Survey Observations

1 Introduction

1 This Wintering Bird Survey Report was authored by Eoin Cussen of Scott Cawley Ltd.

2 It provides an overview of the wintering bird baseline for lands at Baldoyle Racecourse Park, Baldoyle (refer to Figure 1 for location) for the season 2021/22.

3 Baldoyle Racecourse Park is located on the north-eastern edge of Baldoyle on the north-eastern side of Dublin City. The park lands are bounded to the south and west by residential lands, Baldoyle Bay bounds the site to the west, while rough calcareous grassland (GS1) and scrub (WS1) bound the area to the north. The survey area covers an area of *c.* 14ha, including Baldoyle Racecourse Park (Survey Area 1) and the amenity lands directly north (Survey Area 2). The majority of Survey Area 1 is comprised of amenity grassland (GA2), which includes a series of sports pitches with perimeter pathways. The park includes a small children's playground in the west of the site, with small areas of scattered trees and parkland (WD5) and treelines (WL2) in the west and south of the site. The northern, eastern and southern boundaries of Survey Area 1 are formed by ornamental non-native hedging. Survey Area 2 is composed primarily of amenity grassland (GA2) with a series of criss-crossing pathways and a relatively small community garden area (BC2) in the southern portion.

4 The purpose of the report is to:

- Establish the presence/absence and use of the Baldoyle Racecourse Park lands and surrounding area by wintering birds; and
- To understand the importance of the Baldoyle Racecourse Park lands and surrounding area for wintering birds, including those Special Conservation Interest (SCI) species for which European sites have been designated.

Figure 1: The Baldoyle Racecourse Park lands (outlined in yellow) in relation to the surrounding environment.

2 Planning, Policy and Legislation

5 The collation of ecological baseline data and the preparation of this assessment has had regard to legislation and policy documents. The relevant legislative and policy basis for the purposes of preparing this Wintering Bird Survey Report are listed below.

6 The following international legislation is relevant to the Baldoyle Racecourse Park lands:

- *Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora*; hereafter, referred to as the 'Habitats Directive'. The Habitats Directive is the legislation under which the Natura 2000 network1 was established and special areas of conservation (SACs) are designated for the protection of natural habitat types listed in Annex I, and habitats of the species listed in Annex II, of that directive.
- *Directive 2009/147/EEC*; hereafter, referred to as the 'Birds Directive'. The Birds Directive is the legislation under which special protection areas are designated for the protection of endangered species of wild birds listed in Annex I of that directive.

7 The following national legislation is relevant to the Baldoyle Racecourse Park landsin the context of wintering wetland bird SCIs of European sites:

- *European Communities (EC) (Birds and Natural Habitats) Regulations 2011 to 2015*; hereafter the 'Birds and Habitats Regulations'. This legislation transposes the Habitats and Birds Directives into Irish law. It also contains regulations (49 and 50) that deal with non-native invasive species (those included within the Third Schedule of the regulations).

8 The following plans and policies are relevant to the Baldoyle Racecourse Park lands:

- National Biodiversity Action Plan 2017-2021 (Department of Culture Heritage and the Gaeltacht, 2017)
- Fingal Biodiversity Action Plan 2010-2015 (Fingal County Council, 2010)
- Draft Fingal Biodiversity Action Plan 2022-2030 (Fingal County Council, 2022)
- Fingal Development Plan 2017-2023 (Fingal County Council, 2017)
- Draft Fingal Development Plan 2023-2029 (Fingal County Council, 2021)

[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).

3 Methodology

3.1 Author Statement

9 This report was authored by Eoin Cussen of Scott Cawley Ltd., and reviewed by Niamh Burke of Coiscéim Ecology. This report has been approved by Andrew Speer of Scott Cawley Ltd. Survey methodologies were designed and supervised by Scott Cawley and surveys were completed by Eoin Cussen and Lorna Gill of Scott Cawley Ltd.

10 Eoin Cussen is a Senior Consultant Ecologist with Scott Cawley Ltd. Eoin holds a BSc (Hons) in Zoology from University College Cork and MSc (Hons) in Ecological Assessment from the same institution. Eoin is an experienced ecologist with over 4 years' professional postgraduate experience in ecological consultancy including planning related casework for state and non-governmental organisations within Ireland and the UK, input to and preparation of Appropriate Assessment (AA) screenings, Natura Impact Statements, Preliminary Ecological Assessments and Ecological Impact Assessments, and a wide range of experience of ecological surveys for protected habitats and species including otters, bats, birds, with a particular focus on wetland birds and seabirds.

11 Niamh Burke is Principal Ecologist with Coiscéim Ecology. She holds a BSc in Natural Sciences with Environmental Science and a PhD in salmonid ecology. She is a Chartered Environmentalist (CEnv) with the Society for the Environment (Soc Env) and a Full Member of the CIEEM. Niamh is a senior scientist with academic research and consulting experience in terrestrial ecology, aquatic ecology and fluvial geomorphology. She is an experienced project manager with a full working knowledge of EIA, the planning process and relevant environmental legislation, both national and European. With a specialism in aquatic habitats, she also has experience of terrestrial species' surveys and mitigation approaches. In her extensive consultancy roles she has acted as reviewer for all ecological reporting, ensuring consistency of standards and approach.

12 Lorna Gill is a Consultant Ecologist with Scott Cawley. Lorna holds an MSc in Conservation and Biodiversity from the University of Exeter and an honours degree in Natural Sciences with a specialisation in Zoology from Trinity College Dublin. Lorna is experienced in carrying out field surveys in Ireland including wintering birds, breeding birds, bats and other protected mammals. Other experience includes monitoring badger sett closures, radiotracking bats, manual bat call analysis and the use of GIS software. At Scott Cawley, Lorna's work also includes ecological fieldwork and data analysis, the preparation of Appropriate Assessment reports and Ecological Impact Assessments for residential and other commercial projects across the country.

13 Andrew Speer is a Technical Director at Scott Cawley Ltd. with over 15 years' professional ecological consultancy experience in preparing Ecological Impact Assessments (EcIAs). Andrew is a Full Member of the Chartered Institute of Ecology and Environmental Management (CIEEM) and holds a BSc (Hons) in Zoology from the National University of Ireland Galway, a Pg Dip in Geographic Information Systems (GIS) from the University of Ulster and an Adv Dip in Planning & Environmental Law from King's Inns. He has extensive experience in ecological impact assessment and has been the lead author on numerous EcIA reports, Screening for Appropriate Assessment Reports, Natura Impact Statements (NISs) and Natura Impact Reports (NIRs). Andrew also provides technical review and due diligence of EcIA and AA documentation for public and local authorities to aid their decision-making processLorna Gill is a Consultant Ecologist with Scott Cawley. Lorna holds an MSc in Conservation and Biodiversity from the University of Exeter and an honours degree in Natural Sciences with a specialisation in Zoology from Trinity College Dublin. Lorna is experienced in carrying out field surveys in Ireland including wintering birds, breeding birds, bats and other protected mammals. Other experience includes monitoring badger sett closures, radiotracking bats, manual bat call analysis and the use of GIS software. At Scott Cawley, Lorna's work also includes ecological fieldwork and data analysis, the preparation of Appropriate Assessment reports and Ecological Impact Assessments for residential and other commercial projects across the country.

3.2 Desk Study

14 A desk study was undertaken in January 2022. The purpose of the desk study was to collate available information on the local ecological environment. The following resources were used to inform the assessment presented in this report:

- Records of wetland bird species which are Special Conservation Interests (SCIs) for European sites, for the 10km grid square in which the study site is located (O24) and the directly adjacent 10km grid square (O23), as held by the National Biodiversity Data Centre www.biodiversityireland.ie – refer to Appendix I for all desk study records;
- Irish Wetland Bird Survey (I-WeBS) summary data for the following sites:
    - 0U404 Dublin Bay;
    - 0U403 Baldoyle Bay;
    - 0U408 Broadmeadow (Malahide) Estuary;
    - 0U407 Rogerstown Estuary;
    - 0U951 Ireland's Eye,
    - 0U905 Skerries Islands; and
    - 0U903 Lambay Island.
- Ordnance Survey Ireland mapping and aerial photography from http://map.geohive.ie/;
- Information on the conservation status of birds in Ireland from Birds of Conservation Concern in Ireland (Gilbert et al., 2021); and
- Publicly available information on inland feeding sites for light-bellied brent geese Branta bernicla hrota (herein referred to as brent geese) in the Dublin area contained within (Benson, 2009), Scott Cawley (2017) and Enviroguide (2019).

3.3 Field Survey

15 Surveys of wintering wetland birds utilising the Baldoyle Racecourse Park lands were undertaken between sunrise and sunset, for the months of January 2022 through to April 2022, inclusive. Full survey details are provided in Table 1, below

16 The surveyors recorded observations of wintering birds entering and exiting the lands, and the behaviour and movements of birds within the lands. Observations were aided by the use of binoculars (8x42). Transect lines were walked during each survey, where stopping points recorded signs of use by Brent Goose (droppings) as well as variables within the grassland habitats (e.g. sward height, % grass cover, % forb cover, % bare ground). Transect lines are shown in Figure 2, below.

17 The survey effort in this instance is intended to provide a representative sample of use of the lands by wintering birds, with a specific focus on the use of these lands by Brent Goose and other wintering SCI species known to utilise terrestrial foraging sites, including godwits, gulls, curlew, oystercatcher and lapwing. The observations of bird movements in the lands were complemented by a search for evidence of wintering birds in the lands (droppings). Survey area 1 is largely actively managed as a series of recreational pitches and the habitats present include amenity grassland (GA2) bordered by areas of ornamental/ non-native shrubs (WS3), paths (BL3) and treelines (WL2), with a playground, storage shed, disused community centre and carpark located in the north-west corner of the site, and occasional areas of recently created "wildflower meadows" which can only be classified as flower beds and borders (BC4) due to their primarily non-native species composition[2]. Survey area 2, to the north of survey area 1, consists of a separate area

[2] Fossitt (2000). *A Guide to Habitats in Ireland.* The Heritage Council.

of largely amenity grassland (GA2), with a series of paths (BL3) and a large area devoted to a community garden which consists of a mix of dry meadows and grassy verges (GS2) and horticultural land (BC2).

18 The results of field surveys have been contextualised against the 1% threshold of the international population of each species, as contained within Nagy & Langendoen (2018), and against the populations of each species at nearby European sites. European sites in the vicinity of the Baldoyle Racecourse Park lands are illustrated in **Error! Reference source not found.**.

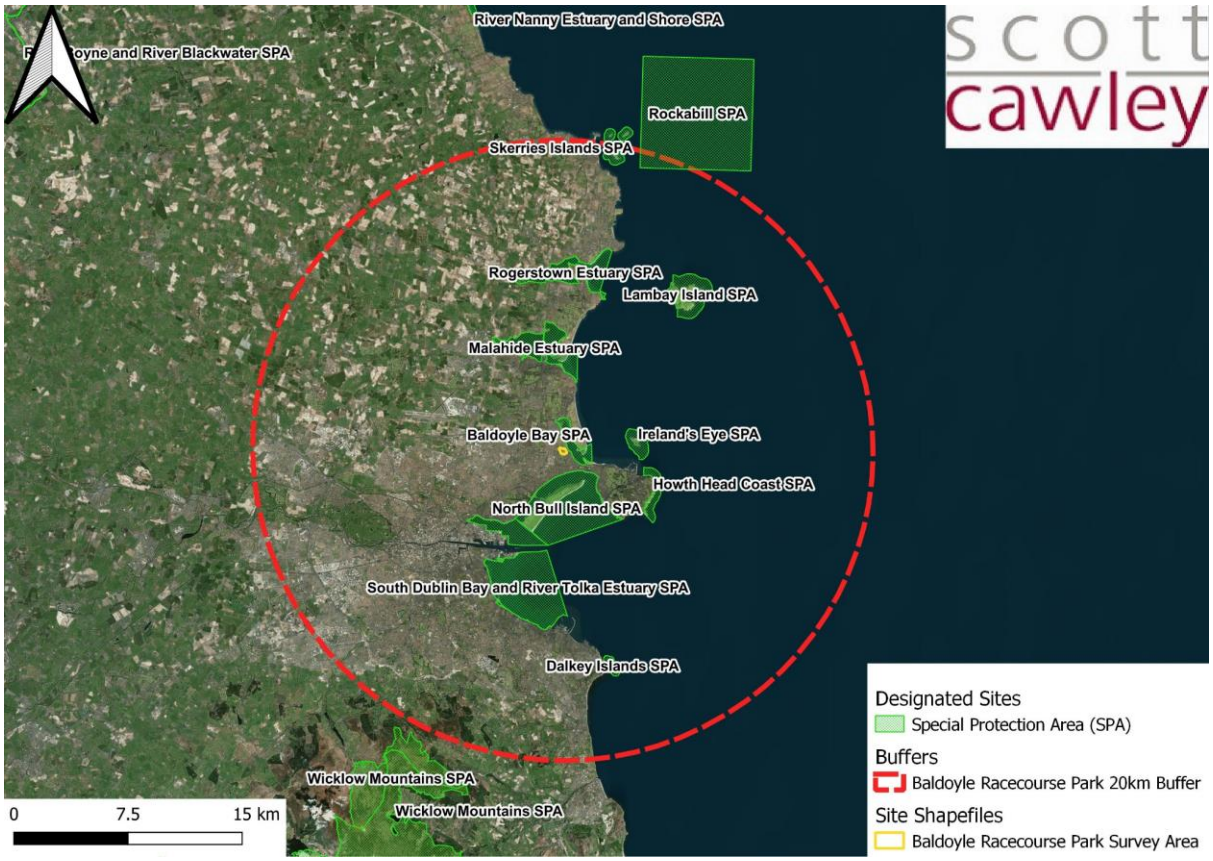
19 Baldoyle Racecourse Park lands are evidently popular with the local community, especially with dogwalkers with numerous incidents of disturbance recorded across the survey period including a number of incidents recorded where the dog-owner deliberately set the dog onto the flock of birds (Brent Goose) present onsite.

Figure 2 Baldoyle Racecourse Park Survey Transects

Table 1 Winter bird survey dates and weather

Date	Survey start time	Survey end time	Cloud cover (x/8)	Wind (x/4)	Temp °C	High Tide	Low tide	Precipitation	Visibility (Excellent/Good/Moderate/Poor)	Notes
06/01/22	08:48	15:30	7/8	2/4	5	12:49	06:34	Occasional heavy showers	Excellent	
13/01/22	09:15	16: 15	3-6/8	0/4	6	07:48	13:23	None	Excellent	
21/01/22	08:50	15:50	7/8	1/4	7	12:21	18:35	None	Excellent	
25/01/22	10:00	17:00	8/8	0/4	6-8	16:45	09:59	None	Excellent	
08/02/22	10:00	17:00	8/8	10	0/4	16:46	10:07	Continuous drizzle, occasional heavy showers	Good	periods of lesser visibility during heavy showers
15/02/22	08:35	15:30	7/8	1/4	7	11:03	16:54	None	Excellent	
24/02/22	08:00	15:00	2-8/8	3/4	3-5	17:18	10:30	Light drizzle/ snow	Good	
08/03/22	09:00	16:00	8/8	3/4	7	15:15	08:40	Heavy showers turning to light rain	Good	
15/03/22	09:10	16:10	6-8/8	1/4	10-12	08:46	14:56	None	Excellent	
22/03/22	10:00	17:00	1-4/8	2/4	14-16	14:11	07:24	None	Excellent	
01/04/22	10:00	17:00	2-6/8	2/4	8-10	10:22	16:31	None	Excellent	
08/04/22	10:00	17:00	1-7/8	2/4	7	17:27	10:57	Occasional heavy showers	Excellent	

Figure 3 Baldoyle Racecourse Park lands in the context of Special Protection Areas within 20km (distance based on SNH 2016 guidance).



3.3.1 Survey Limitations

20 It must be acknowledged that the surveys of the lands were undertaken across a single wintering bird survey season, covering only the later half of that season from 6th January through to 8th April 2022. It is possible that the number and frequency of use of inland feeding sites varies from season to season and within seasons, based on forage resource, disturbance levels, changes to site suitability and other environmental factors. Desktop sources of information have been referenced to overcome this limitation, including recent data on inland foraging sites for brent geese relates to the 2015/16 and 2016/17 wintering bird season, contained within Scott Cawley (2017).

4 Wintering Bird Baseline

21 The results of desk and field surveys are summarised in this section of the report, and account of observations by species is included in the sections below. The results of desk study searches are presented in full in Appendix I of this report, while the full set of survey observations are included as Appendix II of this report.

22 Records of 63 species of wetland birds, as well as three raptors and three seabirds, for which European sites have been designated, were returned from the search of the NBDC database for the 10km grid squares O23 and O24. The records have been reproduced in Appendix I of this report.

23 The following SCI species of European sites in the vicinity of the Baldoyle Racecourse Park lands were observed either flying over or foraging within the Baldoyle Racecourse Park lands in the 2021/2022 wintering bird season:

- Black-headed gull *Chroicocephalus ridibundus*
- Herring gull *Larus argentatus*

- Lesser Black-backed Gull *Larus fuscus*
- Light-bellied brent goose *Branta bernicla hrota*
- Curlew *Numenius arquata*
- Oystercatcher *Haematopus ostralegus*
- Grey heron *Ardea cinerea*
- Common gull *Larus canus*
- Black-tailed Godwit *Limosa Limosa*

24 Wetland bird species are mobile and can regularly travel up to 20km between roosting and feeding sites (Scottish Natural Heritage, 2016). For this reason, it is possible that birds observed at the Baldoyle Racecourse Park lands could belong to populations of SCI species associated with European sites up to 20km from the survey area. Each of the SCI species observed foraging within or flying over the survey area are discussed in more details in the subsections set out below.

25 In order to evaluate the importance of the survey area for each species of wintering bird, the peak number of each bird species observed utilizing the lands is compared to the most recent populations of surrounding European sites, and against the most recent national and international flyway population estimates. Where the peak number recorded of any species is calculated to be >1% of the respective national or international flyway population figures, this population is considered to be of national and / or international importance, respectively. National and international flyway population figures have been taken from Nagy & Langendoen (2018) for wintering waterbirds and form Mitchell et al. (2004) for seabirds.

26 All SPAs present in the vicinity of the Baldoyle Racecourse Park lands are provided in Table 2 below.

Table 2 The Special Conservation Interests (SCIs) of the European sites in the vicinity of the proposed development site (see Figure 3)

European Site Name [Code] and its Special Conservation Interest(s)	Location Relative to the Proposed Development Site
Special Protection Area (SPA)	
Baldoyle Bay SPA [004016] A046 Light-bellied Brent Goose *Branta bernicla hrota* A048 Shelduck *Tadorna tadorna* A137 Ringed Plover Charadrius hiaticula A140 Golden Plover *Pluvialis apricaria* A141 Grey Plover *Pluvialis squatarola* A157 Bar-tailed Godwit *Limosa lapponica* A999 Wetland and Waterbirds NPWS (2013) *Conservation Objectives: Baldoyle Bay SPA 004016. Version 1.* National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.	Located *c.* 180m away
North Bull Island SPA [004006] A046 Light-bellied Brent Goose *Branta bernicla hrota* A048 Shelduck *Tadorna tadorna* A052 Teal *Anas crecca* A054 Pintail *Anas acuta* A056 Shoveler *Anas clypeata* A130 Oystercatcher *Haematopus ostralegus*	Located *c.* 1.2km away

European Site Name [Code] and its Special Conservation Interest(s)	Location Relative to the Proposed Development Site
A140 Golden Plover *Pluvialis apricaria* A141 Grey Plover *Pluvialis squatarola* A143 Knot *Calidris canutus* A144 Sanderling *Calidris alba* A149 Dunlin *Calidris alpina* A156 Black-tailed Godwit *Limosa limosa* A157 Bar-tailed Godwit *Limosa lapponica* A160 Curlew *Numenius arquata* A162 Redshank *Tringa totanus* A169 Turnstone *Arenaria interpres* A179 Black-headed Gull *Chroicocephalus ridibundus* A999 Wetlands & Waterbirds NPWS (2015) *Conservation Objectives: North Bull Island SPA 004006.* Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.	
Ireland's Eye SPA [004117] A017 Cormorant *Phalacrocorax carbo* A184 Herring Gull *Larus argentatus* A188 Kittiwake *Rissa tridactyla* A199 Guillemot *Uria aalge* A200 Razorbill *Alca torda* NPWS (2022) *Conservation objectives for Ireland's Eye SPA [004117].* Generic Version 9.0. Department of Housing, Local Government and Heritage.	Located *c.* 4km away
Malahide Estuary SPA [004025] A005 Great Crested Grebe *Podiceps cristatus* A046 Light-bellied Brent Goose *Branta bernicla hrota* A048 Shelduck *Tadorna tadorna* A054 Pintail *Anas acuta* A067 Goldeneye *Bucephala clangula* A069 Red-breasted Merganser *Mergus serrator* A130 Oystercatcher *Haematopus ostralegus* A140 Golden Plover *Pluvialis apricaria* A141 Grey Plover *Pluvialis squatarola* A143 Knot *Calidris canutus* A149 Dunlin *Calidris alpina* A156 Black-tailed Godwit *Limosa limosa* A157 Bar-tailed Godwit *Limosa lapponica* A162 Redshank *Tringa totanus* A999 Wetland and Waterbirds NPWS (2013) *Conservation Objectives: Malahide Estuary SPA 004025.* Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.	Located *c.* 4.4km away

European Site Name [Code] and its Special Conservation Interest(s)	Location Relative to the Proposed Development Site
Howth Head Coast SPA [004113] A188 Kittiwake *Rissa tridactyla* NPWS (2022) *Conservation objectives for Howth Head Coast SPA [004113].* Generic Version 9.0. Department of Housing, Local Government and Heritage.	Located *c.* 5.1km away
South Dublin Bay and River Tolka Estuary SPA [004024] A046 Light-bellied Brent Goose *Branta bernicla hrota* A130 Oystercatcher *Haematopus ostralegus* A137 Ringed Plover *Charadrius hiaticula* A141 Grey Plover *Pluvialis squatarola* A143 Knot *Calidris canutus* A144 Sanderling *Calidris alba* A149 Dunlin *Calidris alpina* A157 Bar-tailed Godwit *Limosa lapponica* A162 Redshank *Tringa totanus* A179 Black-headed Gull *Chroicocephalus ridibundus* A192 Roseate Tern *Sterna dougallii* A193 Common Tern *Sterna hirundo* A194 Arctic Tern *Sterna paradisaea* A999 Wetland and Waterbirds NPWS (2015) *Conservation Objectives: South Dublin Bay and River Tolka Estuary SPA 004024*. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.	Located *c.* 5.2km away
Rogerstown Estuary SPA [004015] A043 Greylag Goose *Anser anser* A046 Brent Goose *Branta bernicla hrota* A048 Shelduck *Tadorna tadorna* A056 Shoveler *Anas clypeata* A130 Oystercatcher *Haematopus ostralegus* A137 Ringed Plover *Charadrius hiaticula* A141 Grey Plover *Pluvialis squatarola* A143 Knot *Calidris canutus* A149 Dunlin *Calidris alpina alpina* A156 Black-tailed Godwit *Limosa limosa* A162 Redshank *Tringa totanus* A999 Wetlands NPWS (2013) *Conservation Objectives: Rogerstown Estuary SPA 004015*. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.	Located *c.* 10km away
Lambay Island SPA [004069] A009 Fulmar *Fulmarus glacialis*	Located *c.* 11.2km away

European Site Name [Code] and its Special Conservation Interest(s)	Location Relative to the Proposed Development Site
A017 Cormorant *Phalacrocorax carbo* A018 Shag *Phalacrocorax aristotelis* A043 Greylag Goose *Anser anser* A183 Lesser Black-backed Gull *Larus fuscus* A184 Herring Gull *Larus argentatus* A188 Kittiwake *Rissa tridactyla* A199 Guillemot *Uria aalge* A200 Razorbill *Alca torda* A204 Puffin *Fratercula arctica* NPWS (2022) *Conservation objectives for Lambay Island SPA [004069].* Generic Version 9.0. Department of Housing, Local Government and Heritage.	
Dalkey Islands SPA [004172] A192 Roseate Tern *Sterna dougallii* A193 Common Tern *Sterna hirundo* A194 Arctic Tern *Sterna paradisaea* NPWS (2022) *Conservation objectives for Dalkey Islands SPA [004172].* Generic Version 9.0. Department of Housing, Local Government and Heritage.	Located *c.* 13.4km away
Skerries Islands SPA [004122] A017 Cormorant *Phalacrocorax carbo* A018 Shag *Phalacrocorax aristotelis* A046 Brent Goose *Branta bernicla hrota* A148 Purple Sandpiper *Calidris maritima* A169 Turnstone *Arenaria interpres* A184 Herring Gull *Larus argentatus* *S.I. No. 245/2010 - European Communities (Conservation of Wild Birds (Skerries Islands Special Protection Area 004122)) Regulations 2010.* NPWS (2022) *Conservation objectives for Skerries Islands SPA [004122]. Generic Version 9.0.* Department of Housing, Local Government and Heritage.	Located 18.7km away
Rockabill SPA [004014] A148 Purple Sandpiper *Calidris maritima* A192 Roseate Tern *Sterna dougallii* A193 Common Tern *Sterna hirundo* A194 Arctic Tern *Sterna paradisaea* *S.I. No. 94/2012 - European Communities (Conservation of Wild Birds (Rockabill Special Protection Area 004014)) Regulations 2012.* NPWS (2013) *Conservation Objectives: Rockabill SPA 004014. Version 1.* National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.	Located 18.9km away

4.1 Black-headed Gull *Chroicocephalus ridibundus* [A179]

4.1.1 Results of Desk Study for Black-headed Gull

27 Black-headed gull *Chroicocephalus ridibundus* [A179] is a SCI species for which the following European sites within 20km of the Baldoyle Racecourse Park lands have been designated:

- South Dublin Bay and River Tolka Estuary SPA (004024), *c.* 5.2km south. This European site encompasses the coastal and intertidal zones of Dublin Bay extending between the Bull Wall in the north and Dún Laoghaire West Pier in the south. The baseline population of black-headed gull in the European site, based on the five-year mean peak counts for the period 1995/96-1999/2000, is listed as 3,040 birds in the Conservation Objectives Supporting Document (NPWS, 2014). South Dublin Bay and River Tolka Estuary SPA (004024) is listed as the fourth most important site in the country for this species. The flock in South Dublin Bay and the River Tolka Estuary SPA has decreased substantially since the population baseline was established in the late 1990s but has incrementally increased in recent years based on review of I-WeBS data for 0U404 Dublin Bay (most recent 5-year mean peak count for the years 2015/16 to 2019/20 is 3,340).
- North Bull Island SPA (004006), *c.* 1.2km south. This European site encompasses the coastal fringes of Bull Island, and surrounding intertidal and coastal zones extending between the North Bull wall in the south and Howth Head in the north. The baseline population of black-headed gull in the European site, based on the five-year mean peak counts for the period 1995/96-1999/2000, is listed as 2,196 birds in the Conservation Objectives Supporting Document (NPWS, 2014). North Bull Island SPA (004006) is the eighth most important site in Ireland for wintering black-headed gull and is of all-Ireland importance for the species (NPWS, 2014).

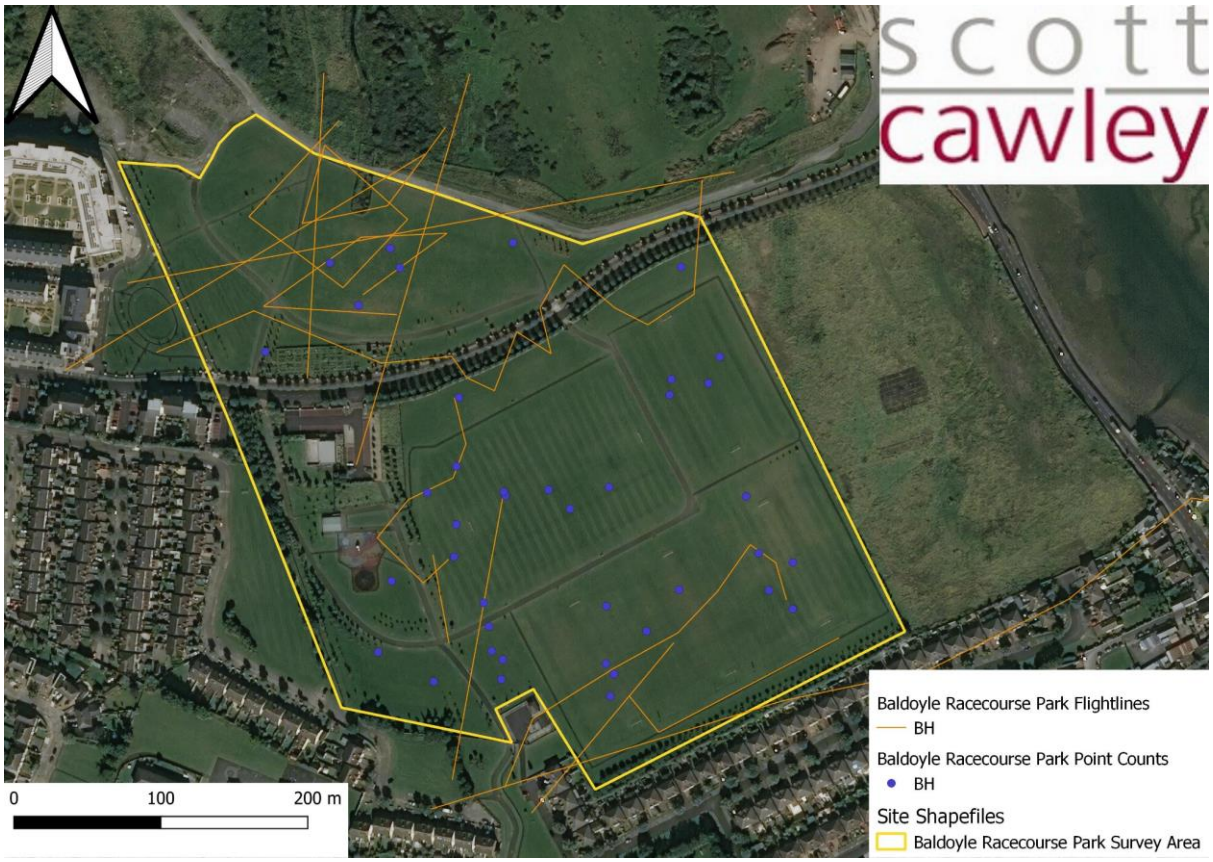
28 It is likely that there is some movement of birds between the aforementioned flocks over the winter period, based on changes in foraging resources and other variables. The flock in Dublin Bay (encompassing both the South Dublin Bay and River Tolka Estuary SPA, and North Bull Island SPA populations) forms a single unit, with roosting spread out across several subsites in the Bay (NPWS, 2014). The species forages terrestrially, intertidally and sub-tidally in the Greater Dublin Area and Dublin Bay.

4.1.2 Field Survey Results for Black-headed Gulls

29 Black-headed gull were observed foraging or on the ground in the lands on eight of the 12 survey dates. A peak count of 53 birds was observed perched or foraging on amenity grassland habitat on 8th February 2022.

30 Birds were observed flying over the Baldoyle Racecourse Park lands on five survey days usually in small flocks of 1-7 birds, but occasionally in larger flocks of 12-18 birds. A peak count of 18 birds was observed flying over the lands on 15th February 2022.

Figure 4 Black-headed Gull activity in the survey area



4.1.3 Black-headed Gull at Baldoyle Racecourse Park in the context of European sites within 20km

31 In order to evaluate the importance of the survey area for foraging black-headed gull, the number of birds observed foraging in the lands is be compared to the baseline populations of European sites in the vicinity, and against the international flocks. The peak count of foraging birds in the survey area (53 birds) potentially represents:

- 1.7% of the baseline population of the South Dublin Bay and River Tolka Estuary SPA (004024) of 3,040 birds, should the flock utilising the survey area belong to this population. It represents 1.5% of the more recent population estimate of the SPA flock (2015/16-2019/20) of 3,340 birds as documented within NPWS (2014).
- 2.4% of the baseline population of the North Bull Island SPA (004006) of 2,196 birds, should the flock utilising the survey area belong to this population. It represents 1.5% of the more recent population estimate of the SPA flock (2015/16-2019/20) of 3,340 birds as documented within NPWS (2014).

32 According to Nagy & Langendoen (2018), 1% of the international population of black-headed gull is 20,000 birds. The peak count of birds utilising the survey area did not reach or exceed this number in the 2021/22 survey season.

4.2 Herring Gull *Larus argentatus* [A184]

4.2.1 Results of Desk Study for Herring Gull

33 Herring gull Larus argentatus [A184] is an SCI species for which the following European sites within 20km of the Baldoyle Racecourse Park lands have been designated:

- Ireland's Eye SPA (004117), *c.* 4km east of the Baldoyle Racecourse Park lands. The European site encompasses the island of Ireland's Eye and the surrounding coastal waters. Ireland's Eye is an important breeding site for herring gull, and has a population of 250 birds (NPWS, 2020a).
- Lambay Island SPA (004069), *c.* 11.2km north-east of the Baldoyle Racecourse Park lands. The European site encompasses Lambay Island and its surrounding coastal waters. Lambay Island is an important breeding site for herring gull, and has a population of 1,806 birds (NPWS, 2020b).
- Skerries Islands SPA (004122), *c*. 18.7km north of the Baldoyle Racecourse Park lands. The European site encompasses a group of three small uninhabited islands and the seas surrounding them. Skerries Islands SPA is an important breeding site for herring gull, and has a population of 250 birds (NPWS, 2020c).

34 There is potential that members of the Ireland's Eye, Lambay Island or Skerries Islands SPA breeding population utilise the Baldoyle Racecourse Park lands for forage during the winter months. This species is a commonly encountered urban bird species, with large populations residing and breeding in the urban area around Dublin, with c. 770 Apparently Occupied Nests (AON) of Herring Gull recorded within urban areas of Co. Dublin during the recent National Gull Survey[3].

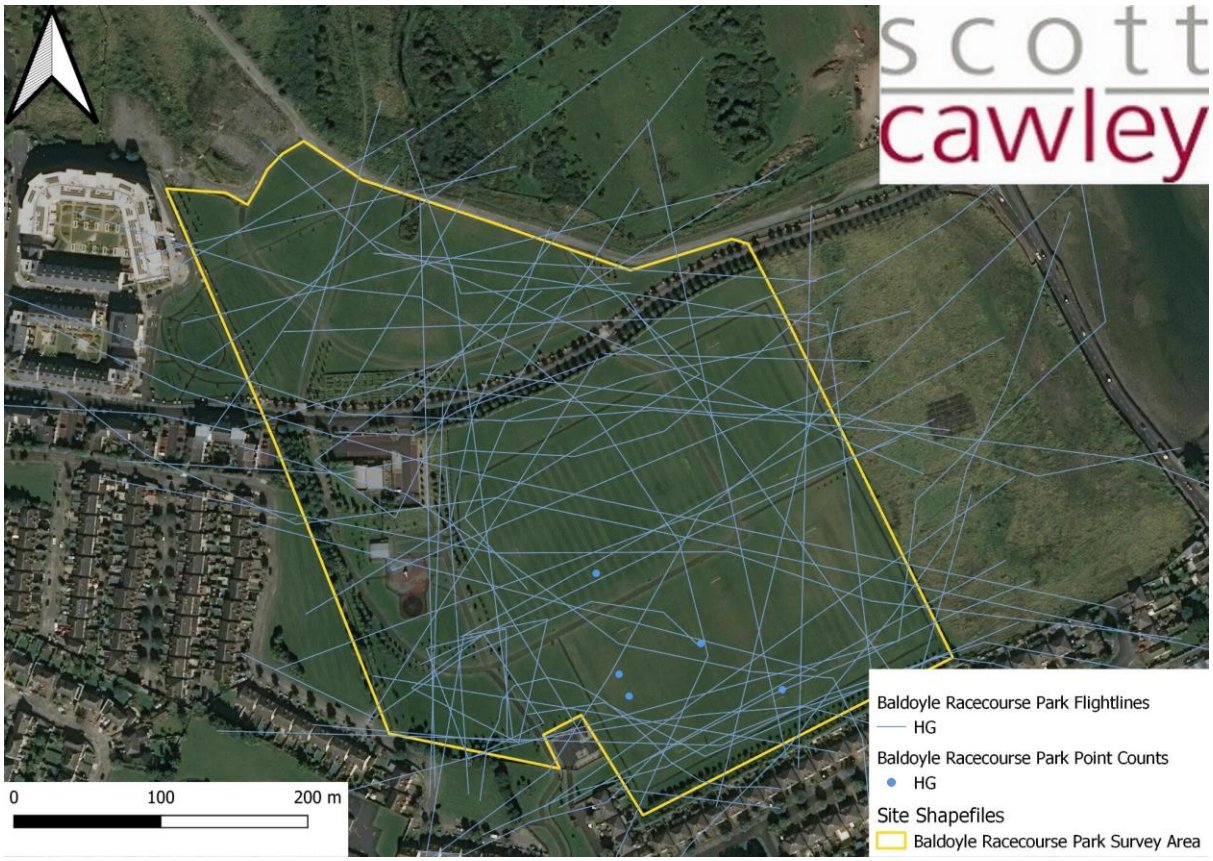
4.2.2 Field Survey Results for Herring Gull

35 Herring gull were observed foraging or on the ground in the Baldoyle Racecourse Park lands on five out of 12 survey dates. Herring gull were usually recorded as individuals or as small flocks of 2-3 birds, a peak count of 3 birds was recorded on 08th April 2022. The birds were observed foraging for earthworms on grassland areas of the site.

36 Herring gulls were observed flying over the Baldoyle Racecourse Park lands on eight of the 12 survey dates, as individuals or in small flocks of generally 2-3 birds. A peak count of 13 birds was recorded flying over the lands on 22nd March 2022. The flights of herring gull were most often between 10m and 30m high and they were recorded flying in all directions over the lands.

[3] Keogh, N. T. & Lauder, A. W. (2021) National Urban Gull Survey 2021: Technical Report. National Parks & Wildlife Service of Department of Housing, Local Government & Heritage.

Figure 5 Herring Gull activity in the survey area



4.2.3 Herring Gull at Baldoyle Racecourse Park in the context of European sites within 20km

37 It is worth bearing in mind that nearby European sites have been designated for their breeding populations of Herring Gull as opposed to their wintering populations. The surveys undertaken to inform this report related to the winter season, when the resident population is likely to be boosted by winter migrants. A direct comparison against nearby European site populations, is therefore not possible.

38 In relation to wintering populations of the species in the vicinity, the peak count of birds in the Baldoyle Racecourse Park lands potentially represents:

- 0.6% of the wintering population in Dublin Bay, referencing the I-WeBS mean peak count of 493 birds for the period 2015/16 – 2019/20.
- 3.4% of the wintering population in Baldoyle Bay, referencing the I-WeBS mean peak count of 86 birds for the period 2015/16 – 2019/20.
- 1.1% of the wintering population at Ireland's Eye SPA, referencing the I-WeBS mean peak count of 267 birds over the period 2013/14 – 2015/16 [4].
- 2% of the wintering population at Lambay Island SPA, referencing the I-WeBS mean peak count of 150 birds over the period 2010/11 – 2013/14[5].
- 1% of the wintering population at Skerries Islands SPA, referencing the I-WeBS mean peak count of 295 birds over the period 2013/14 – 2015/16.

[4] To note that the I-WeBS data for Ireland's Eye SPA has been irregularly collected and is likely to be an underestimate.
[5] To note that the I-WeBS data for Lambay Island SPA has been irregularly collected and is likely to be an underestimate, with a mean peak count of 2,400 Herring Gull for 1995/96-1999/00 .

39 According to Nagy & Langendoen (2018), 1% of the international population of herring gull is 10,200 birds. The peak count of birds utilising the survey area did not reach or exceed this number in the 2021/22 survey season. It should also be noted that regular wintering counts are not conducted on the Islands surrounding Dublin thereby the use of standard 5-year mean peak counts was not possible, as such the figures above represent mean peak counts for the most recent years of data collection.

4.3 Lesser Black-Backed Gull *Larus fuscus* [A183]

4.3.1 Results of Desk Study for Lesser Black-Backed Gull

40 Lesser Black-Backed Gull Larus fuscus [A183] is a SCI species for which the following European site within 20km of the Baldoyle Racecourse Park lands have been designated:

- Lambay Island SPA (004069), *c.* 11.2km north-east of the Baldoyle Racecourse Park lands. The European site encompasses Lambay Island and its surrounding coastal waters. Lambay Island is an important breeding site for lesser-black-backed gull, and had a population of 309 breeding pairs in 1999. A more recent survey conducted in 2004 recorded a population of 133 breeding pairs (NPWS, 2020b).

41 There is potential that members of the Lambay Island SPA breeding population utilise the Baldoyle Racecourse Park lands for forage during the winter months. This species is present in a wide variety of habitats, including urban areas.

4.3.2 Field Survey Results for Lesser Black-Backed Gull

42 Lesser black-backed gull were observed on the Baldoyle Racecourse Park lands on a single survey date, 2 individuals on the 01st April 2022. These birds were onsite when the surveyor arrived to start the survey and were not recorded leaving the site. No individuals were recorded foraging within the lands on any survey date.

Figure 6 Lesser Black-backed Gull activity in the survey area

4.3.3 Lesser Black-Backed Gull at Baldoyle Racecourse Park in the context of European sites within 20km

43 It is worth bearing in mind that nearby European sites have been designated for their breeding populations of lesser black-backed gull as opposed to their wintering populations. The surveys undertaken to inform this report related to the winter season, when the resident population is likely to be boosted by winter migrants. A direct comparison against nearby European site populations, is therefore not possible.

44 In relation to wintering populations of the species in the vicinity, the peak count of birds in the Baldoyle Racecourse Park lands potentially represents[6]:

- 200% of the wintering population in Baldoyle Bay, referencing the I-WeBS mean peak count of 1 birds for the period 2015/16 – 2019/20.
- 9% of the wintering population at Dublin Bay, referencing the I-WeBS mean peak count of 22 birds over the period 2015/16 – 2019/20.

45 Wintering populations of Lesser Black-backed Gull have not been recorded during recent I-WeBs counts carried out at Lambay Island SPA, Ireland's Eye SPA and Skerries Islands SPA.

46 According to Nagy & Langendoen (2018), 1% of the international population of lesser black-backed gull is 5,500 birds. The peak count of birds utilising the survey area did not reach or exceed this number in the 2020/21 survey season.

4.4 Light-bellied Brent Goose *Branta bernicla hrota* [A046]

4.4.1 Results of Desk Study for Brent Goose

47 Light-bellied brent goose Branta bernicla hrota [A046] show a preference for grasslands with short, dense swards c.5 cm in height[7], and is a SCI species for which the following European sites within 20km of the Baldoyle Racecourse Park lands have been designated:

- South Dublin Bay and River Tolka Estuary SPA (004024), *c.* 5.2km south. This European site encompasses the coastal and intertidal zones of Dublin Bay extending between the Bull Wall in the north and Dún Laoghaire West Pier in the south. The baseline population of brent geese in the European site, based on the five-year mean peak counts for the period 1995/96-1999/2000, is listed as 525 birds in the Conservation Objectives Supporting Document (NPWS, 2014). South Dublin Bay and River Tolka Estuary SPA (004024) is listed as the twelfth most important site in the country for this species. It should be noted that the number of brent geese in Dublin Bay has increased significantly since the original baseline population was estimated based on review of I-WeBS data for 0U404 Dublin Bay (mean peak count for the years 2015/16 to 2019/20 is 3,453).
- North Bull Island SPA (004006), *c.* 1.2km south. This European site encompasses the coastal fringes of Bull Island, and surrounding intertidal and coastal zones extending between the North Bull wall in the south and Howth Head in the north. The baseline population of brent geese in the European site, based on the five-year mean peak counts for the period 1995/96-1999/2000, is listed as 1,548 birds in the Conservation Objectives Supporting Document (NPWS, 2014). North Bull Island SPA (004006) is the most important site in Ireland for wintering brent geese (NPWS, 2014). The site hosts a population of international importance for the species. It should be noted that the number of brent geese in Dublin Bay has increased significantly since the original baseline population was

[6] To note that there is no I-WeBS data for lesser black-backed gull at Lambay Island.

[7] BirdLife International (2022) Species factsheet: Branta bernicla. Downloaded from http://www.birdlife.org on 28/07/2022.

estimated based on review of I-WeBS data for 0U404 Dublin Bay (mean peak count for the years 2015/16 to 2019/20 is 3,453).

- Baldoyle Bay SPA (004016), *c*. 180m east. This European site encompasses the intertidal lagoon and tidal mouth of an estuary between Baldoyle Village and Portmarnock Village in North County Dublin. The baseline population for brent geese at this European site is 726 birds, based on the five-year mean peak counts for the period 1995/96-1999/2000 (NPWS, 2012). Baldoyle Estuary SPA is listed as the seventh most important site for brent geese in Ireland. The Baldoyle flock has decreased in size relative to the baseline population for the SPA based on review of recent I-WeBS data for the site (mean peak count for the years 2015/16 to 2019/20 is 506).
- Malahide Estuary SPA (004025), *c.* 4.4km north. This European site encompasses the Malahide Estuary and Broadmeadow Water and surrounding coastal habitats. The baseline population for brent geese at this European site is 1,104 birds, based on the five-year mean peak counts for the period 1995/96-1999/2000 (NPWS, 2013a). Malahide Estuary SPA is listed as the fourth most important site for brent geese in Ireland. The Malahide Estuary flock has decreased in size relative to the baseline population for this SPA based on review of recent I-WeBS data for the site (mean peak count for the years 2015/16 to 2019/20) is 932).
- Rogerstown Estuary SPA (004015), *c.* 10km north. The baseline population for brent geese at this European site is 1,069 birds, based on the five-year mean peak counts for the period 1995/96-1999/2000 (NPWS, 2013b). Rogerstown Estuary SPA is listed as the fifth most important site for brent geese in Ireland. The Rogerstown Estuary flock has increased in size relative to the baseline population for the SPA based on review of recent I-WeBS data for the site (mean peak count for the years 2015/16 to 2019/20 is 2,603).
- Skerries Islands SPA (004122), *c*. 18.7km north. The baseline population for brent geese at this European site is 242 birds (NPWS, 2020c). The European site encompasses a group of three small uninhabited islands and the seas surrounding them. The Skerries Islands SPA flock has not been regularly surveyed as part of I-WeBS. However, the Skerries Coast I-WeBS survey site partially overlaps with the Skerries Islands survey area and the brent goose flock size recorded at this site is comparable to the baseline population for the Skerries Islands SPA (mean peak count for the years 2015/16 to 2019/20 is 200).

48 It is likely that there is some movement of birds between the aforementioned flocks over the winter period, based on changes in foraging resources and other variables. The flock in Dublin Bay (encompassing both the South Dublin Bay and River Tolka Estuary SPA, and North Bull Island SPA populations) forms a single unit, with roosting concentrated in the Lagoon east of Bull Island (NPWS, 2014). The Dublin Bay population forages on *Zostera* beds and algal mats in the bay. It also uses a range of terrestrial sites inland of Dublin Bay for foraging (NPWS 2014; Benson, 2009; Scott Cawley, 2017; Enviroguide, 2019). It is thought that the switch to inland terrestrial sites is linked to recent increases in population and/or depletion of coastal foraging resources through the winter season (NPWS, 2014; Benson, 2009).

49 The first published records of brent geese using inland feeding sites dates to 1991 (O'Briain & Healy, 1991). A study of the use of inland foraging sites by Brent Geese was undertaken and published in Benson (2009). Benson (2009) identified 60 sites across the Dublin area in her study. These sites were spread between Portmarnock in the North, Sandymount in the south and Ashtown and Greenhills in the west. The Baldoyle Racecourse Park lands do not appear in the list of 60 sites compiled by Benson (2009). More recent work on the range of brent geese in Dublin was undertaken to inform Natura Impact Statements for a residential development in St. Anne's Park (Scott Cawley, 2017; Enviroguide, 2019). Scott Cawley undertook surveys of a large number of sites across the Dublin area in the 2015/16 and 2016/17 winter bird seasons, identifying 119 inland foraging sites for brent geese across the Dublin Area. The Baldoyle Racecourse Park lands were identified as a known inland feeding site in Scott Cawley (2017), where they are referred to as "N. Bull/Baldoyle Racecourse Park Golf Course S.". Data on the site relates to the seasons 2015/2016, 2013/2014 and 2012/2013, and a peak count of 450 birds was recorded at the site on 9th February 2013.

4.4.2 Field Survey Results for Brent Geese

50 Brent geese were observed foraging within the lands on eight survey dates, with numbers ranging from flocks of less than 10 birds, to large flocks. All flocks of foraging brent geese recorded were present on amenity grassland habitat in the central and southern portion of the lands, with small flocks recorded on two occasions on Survey Area 2 to the north of the main Baldoyle Racecourse Park. Additionally, goose droppings were recorded during transect surveys on nine of the 12 survey days. No droppings were recorded from Transects 6, 8 and 9, while only small numbers were recorded from Transects 2 and 5. Small numbers ranging from 2-7 generally but with a peak count of 15 were recorded in Transect 7 in Survey Area 2 to the north of the main Baldoyle Racecourse Park lands. The majority of records were concentrated on the sports pitches in the centre of the lands, encapsulating Transects 1, 3 and 4. The largest concentration of droppings was recorded in Transect 3 with 40no. recorded on the 08th February 2022. Transect survey results are shown in Figures 8, 9 and 10, below. Full survey results are shown ion Appendix II.

51 The peak count of foraging brent geese recorded on the lands was 726 birds, recorded on 08th March 2022. The amenity grassland habitat present on the actively managed pitches in the central, southern and eastern portion of the lands is suitable for feeding brent geese as they favour a short sward. Although the grassland habitat present in the northern portion of the lands is considered to be suitable for brent geese, they favour expansive open areas so they can keep watch for predators and this area is relatively small and bounded closely by pathways, therefore the northern portion of the lands (Survey Area 2) is considered to be less suitable for brent geese than the southern section (Survey Area 1).

52 Flocks of brent geese were observed flying over the Baldoyle Racecourse Park lands on ten dates, with numbers ranging from flocks of 10 birds, to large flocks. The peak count of birds flying over the lands was 726 birds (which had landed onsite in numerous flocks of varying sizes on the 08th March 2022, as outlined above), when the entire flock flew from site heading south with no perceived disturbance recorded. The remainder of the flocks were sized between 1-10 and 180-400 birds. The brent goose flocks tended to fly north-east - south-west across the lands which implies that birds were moving across the Baldoyle/Sutton area between Baldoyle Bay and Dublin Bay. There are a number of known brent goose inland feeding sites nearby in Sutton, including sites at Santa Sabina school, Sutton golf course and Sutton rugby club. On a number of occasions interchange of Brent Goose was recorded utilising the Baldoyle Racecourse Park lands and the adjacent Seagrange Park, where by when birds were disturbed from one area they actively moved to the other to attempt to forage.

Figure 7: Light-bellied Brent goose activity in the survey area

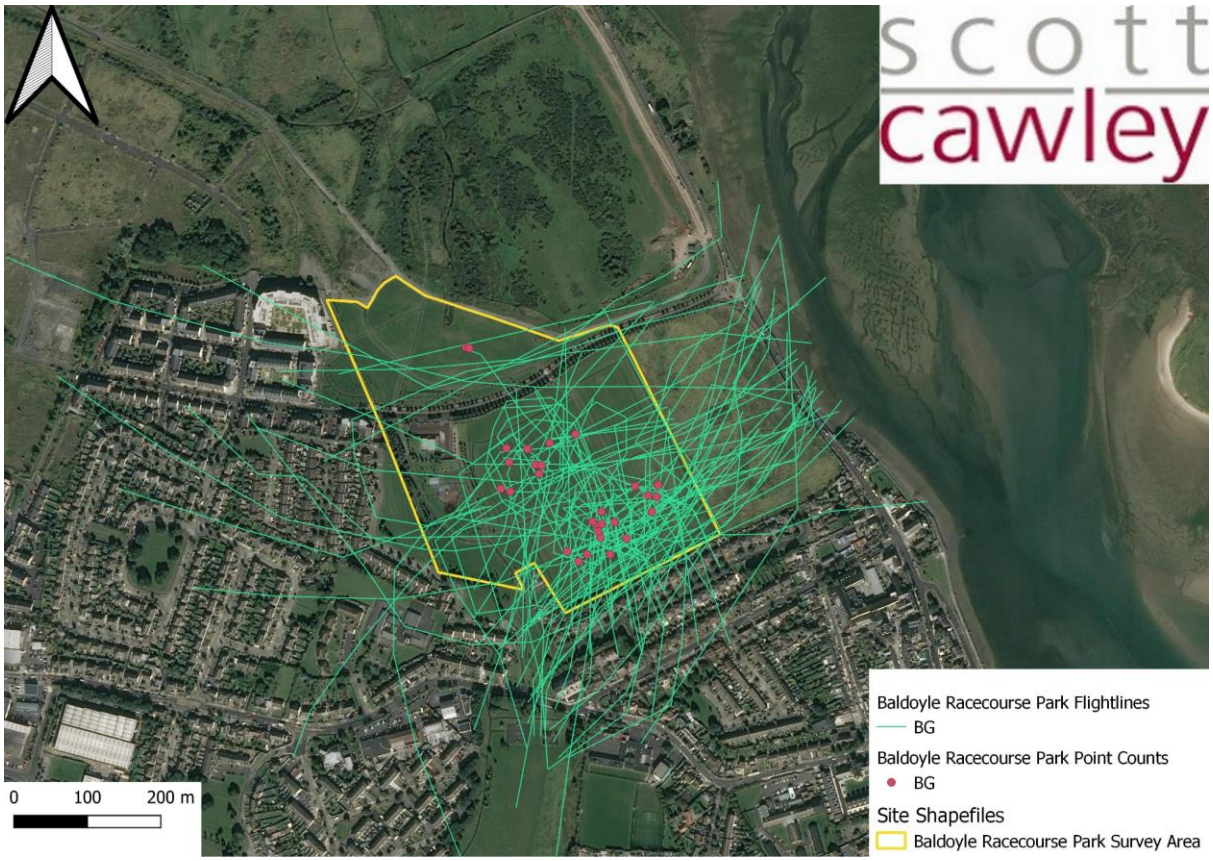


Figure 8 Light-bellied Brent goose Droppings Recorded in the Survey Area

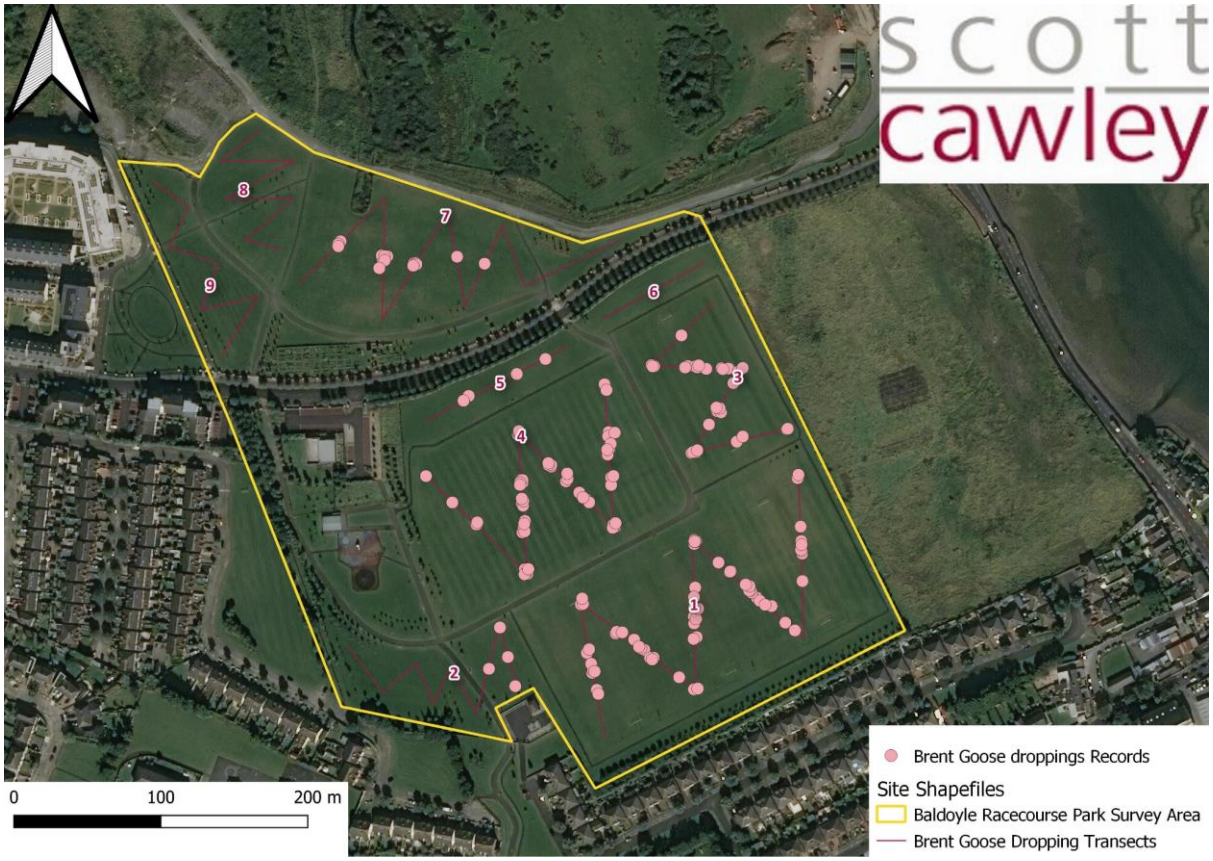


Figure 9 Light-bellied Brent goose Droppings >10 Recorded in the Survey Area

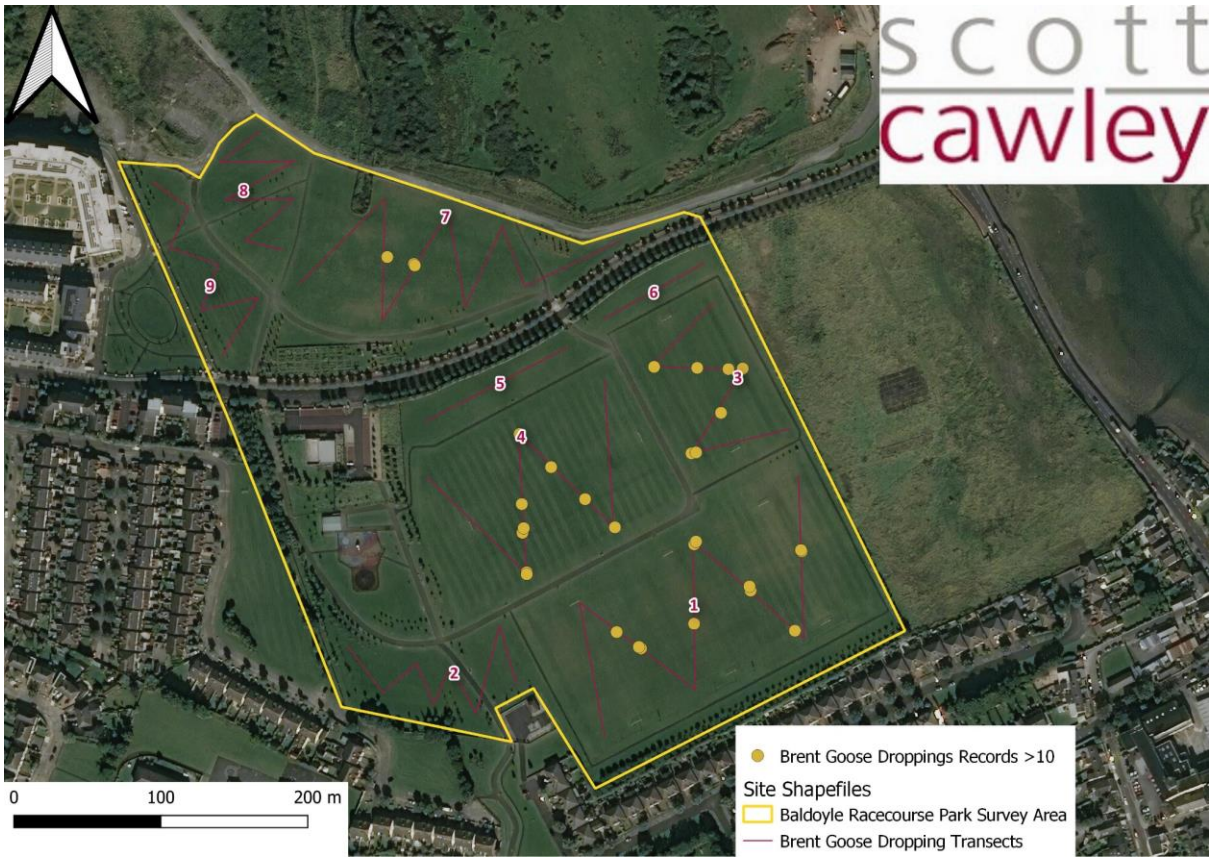
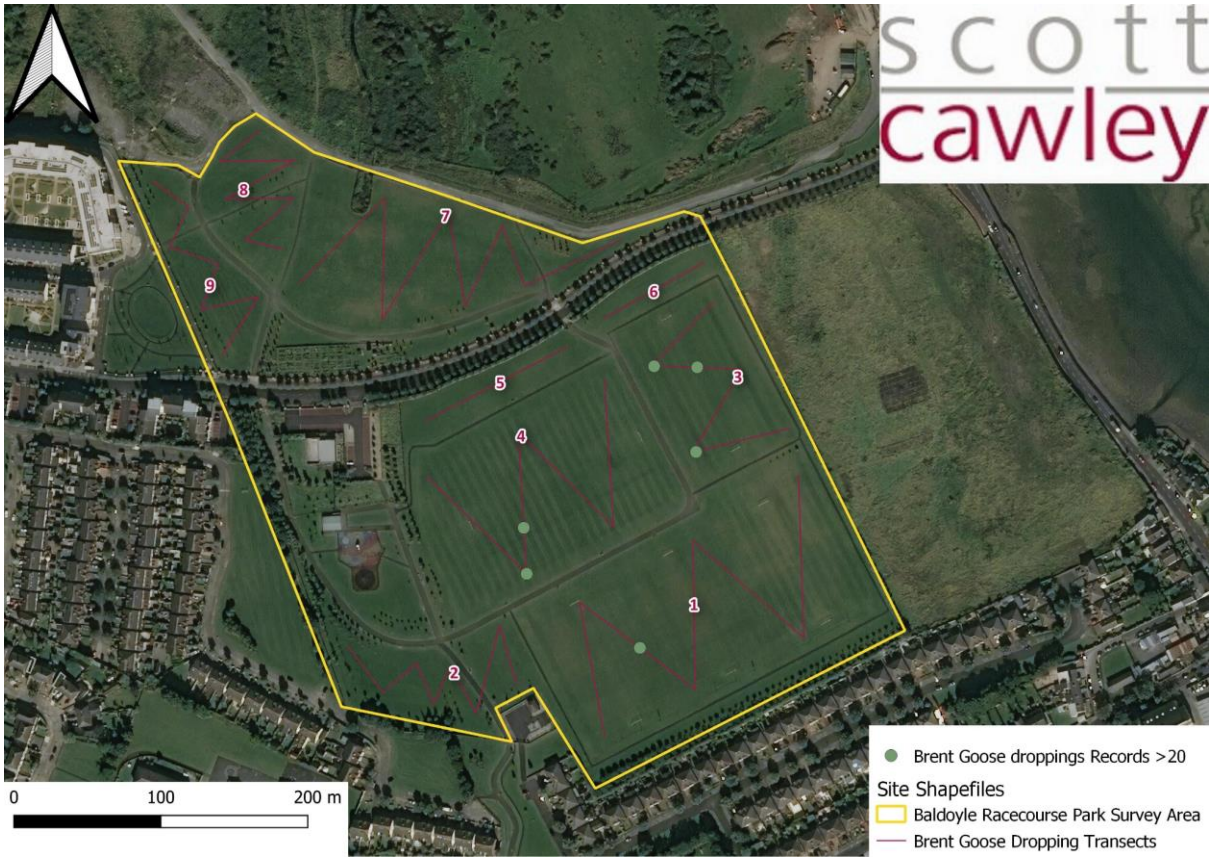


Figure 10 Light-bellied Brent goose Droppings >20 Recorded in the Survey Area



4.4.3 Brent Geese at Baldoyle Racecourse Park in the context of European sites within 20km

53 In relation to wintering populations of the species in the vicinity, the peak count of 726 birds in the Baldoyle Racecourse Park lands potentially represents:

- 21% of the wintering population in Dublin Bay, referencing the I-WeBS mean peak count of 3,453 birds for the period 2015/16 – 2019/20 (See Appendix I).
- 143% of the wintering population in Baldoyle Bay, referencing the I-WeBS mean peak count of 506 birds for the period 2015/16 – 2019/20.
- 77% of the wintering population in Malahide Estuary, referencing the I-WeBS mean peak count of 932 birds for the period 2015/16 – 2019/20.
- 27% of the wintering population in Rogerstown Estuary, referencing the I-WeBS mean peak count of 2,603 birds for the period 2015/16 – 2019/20.
- 363% of the wintering population at Skerries Islands, referencing the I-WeBS mean peak count of 200 birds over the period 2015/16- 2019/20.

54 According to Nagy & Langendoen (2018), 1% of the international population of light-bellied brent goose is 400 birds. The peak count of birds utilising the survey area exceeded this number in the 2021/22 survey season on two occasions: 06th January 2022 and 08th March 2022.

4.5 Curlew *Numenius arquata* [A160]

4.5.1 Results of Desk Study for Curlew

55 Curlew is a SCI species for which the following European site within 20km of the Baldoyle Racecourse Park lands have been designated:

- North Bull Island SPA (004006), *c.* 1.2km south. The baseline population of curlew in the European site, based on the five-year mean peak counts for the period 1995/96-1999/2000, is listed as 937 birds in the Conservation Objectives Supporting Document (NPWS, 2014). North Bull Island SPA (004006) is the 11th most important site in Ireland for wintering curlew (NPWS, 2014). The site hosts a wintering population of national importance for the species. Data on the flock size at North Bull Island SPA contained within the *Conservation Objectives Supporting Document* (NPWS, 2014) and for Dublin Bay (0U404) contained within I-WeBS data indicates that the SPA population has decreased relative to the baseline population (mean peak count for the years 2006/07 to 2010/12[8] is 918 (NPWS, 2014), mean peak counts for I-WeBs in the years is 2015/16 to 2019/20 is 882).

56 Curlew are known to forage for earthworms on damp grassland on terrestrial sites (NPWS, 2014). Curlew are known to use inland feeding sites but the network of inland feeding sites is not as well-documented as it is for brent geese. The long-term trend (since the first I-WeBS population estimated, and the most recent population estimate in 2019/20) in the Irish overwintering population of curlew has been a precipitous decline in numbers (Burke et al., 2018).

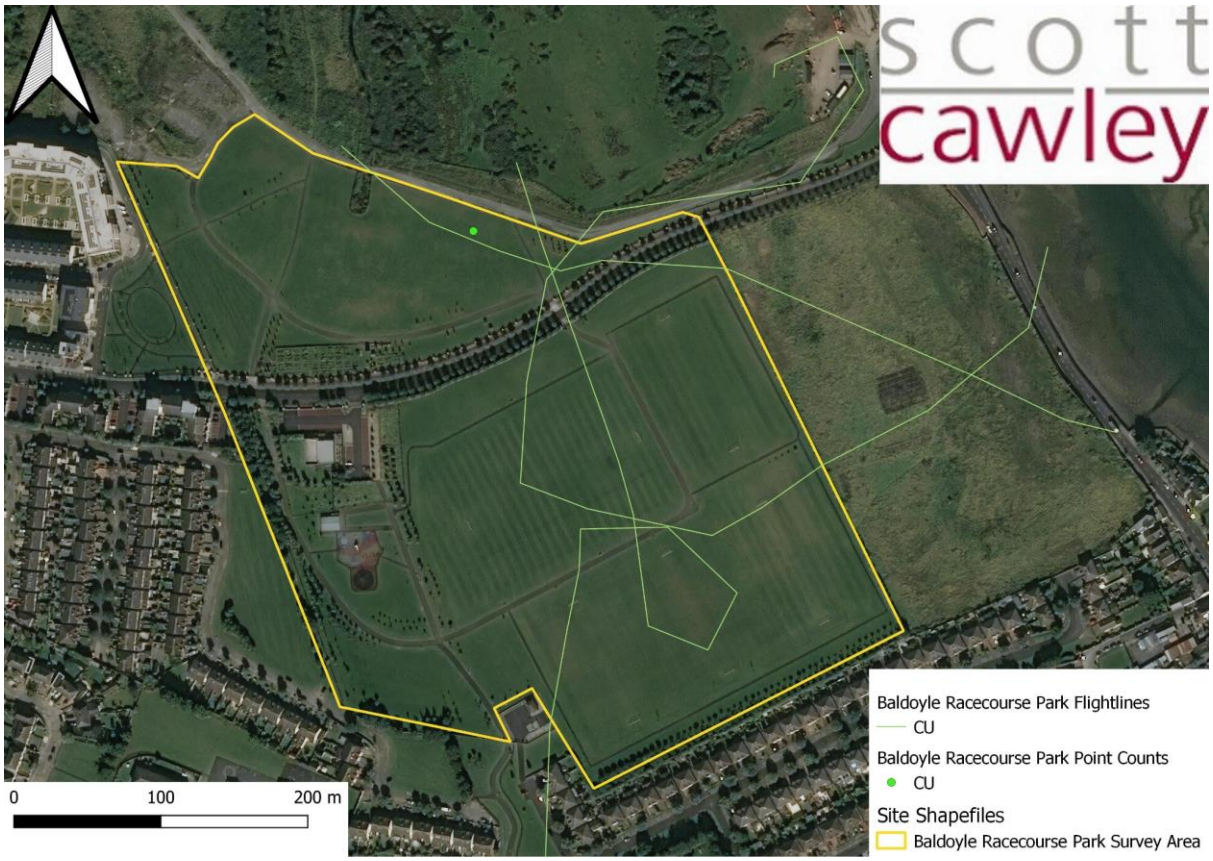
4.5.2 Field Survey Results for Curlew

57 A single curlew was observed foraging on amenity grassland habitat in Survey Area 2 to the north of the Baldoyle Racecourse Park lands on the 6th January 2022. This was the only record of Curlew landing on the site across the survey period.

58 Curlew were also observed flying over the site on three survey dates, twice as singular birds on the 13th January 2022 and the 08th February 2022, and as a pair on the 06th January 2022.

[8] To note that the I-WeBS data available is for Dublin Bay as a whole and includes counts carried out at South Dublin Bay and River Tolka Estuary SPA.

Figure 11: Curlew activity in the survey area



4.5.3 Curlew at Baldoyle Racecourse Park in the context of European sites within 20km

59 In relation to wintering populations of the species in the vicinity, the peak count of a singular individual in the Baldoyle Racecourse Park lands potentially represents:

- 0.1% of the wintering population in Dublin Bay, referencing the I-WeBS mean peak count of 882 birds for the period 2015/16-2019/20.

60 According to Nagy & Langendoen (2018), 1% of the international population of curlew is 7,600 birds. The peak count of birds utilising the survey area did not reach or exceed this number in the 2020/21 survey season.

4.6 Oystercatcher *Haematopus ostralegus* [A130]

4.6.1 Results of Desk Study for Oystercatcher

61 Oystercatcher is a SCI species for which the following European sites within 20km of the Baldoyle Racecourse Park lands have been designated:

- North Bull Island SPA (004006), *c.* 1.2km south. The baseline population of curlew in the European site, based on the five-year mean peak counts for the period 1995/96-1999/2000, is listed as 1,784 birds in the Conservation Objectives Supporting Document (NPWS, 2014). North Bull Island SPA (004006) is the 2nd most important site in Ireland for wintering oystercatcher (NPWS, 2014). The site hosts a population of all-Ireland importance for the species. Data on the flock size at North Bull Island SPA contained within the *Conservation Objectives Supporting Document* (NPWS, 2014) and for Dublin Bay contained within I-WeBS data (See Appendix I) indicates that the SPA population has nearly doubled since the baseline population (mean peak count for the years 2015/16 to 2019/20[9] is 3,419).
- South Dublin Bay and River Tolka Estuary SPA (004024), *c.* 5.2km south. This European site encompasses the coastal and intertidal zones of Dublin Bay extending between the Bull Wall in the north and Dún Laoghaire West Pier in the south. The baseline population of brent geese in the European site, based on the five-year mean peak counts for the period 1995/96-1999/2000, is listed as 1,784 birds in the Conservation Objectives Supporting Document (NPWS, 2014). The site hosts a population of all-Ireland importance for the species. Data on the flock size at South Dublin Bay and River Tolka Estuary SPA contained within the *Conservation Objectives Supporting Document* (NPWS, 2014) and for Dublin Bay contained within I-WeBS data (See Appendix I) indicates that the SPA population is comparable to the baseline population (mean peak count for the years 2015/16 to 2019/20[10] is 3,419).
- Malahide Estuary SPA (004025), *c.* 4.4km north. This European site encompasses the Malahide Estuary and Broadmeadow Water and surrounding coastal habitats. The baseline population for oystercatcher at this European site is 1,360 birds, based on the five-year mean peak counts for the period 1995/96-1999/2000 (NPWS, 2013a). Recent I-WeBS data for Malahide Estuary indicates that the SPA population has decreased slightly since the baseline population (mean peak count for the years 2015/16 to 2019/20 is 1,050).
- Rogerstown Estuary SPA (004015), *c.* 10km north. The baseline population for oystercatcher at this European site is 1,345 birds, based on the five-year mean peak counts for the period 1995/96-1999/2000 (NPWS, 2013b). Recent I-WeBS data for Rogerstown Estuary indicates that the SPA population is comparable to the baseline population (mean peak count for the years 2015/16 to 2019/20 is 1,382).

62 Oystercatcher are known to forage for earthworms and tipulid larvae on grasslands[11]. Oystercatcher are known to use inland feeding sites in Dublin but the network of inland feeding sites is not as well-documented as for brent geese. The long-term trend (since the first I-WeBS population estimated, and the most recent population estimate in 2018) in the Irish overwintering population of oystercatcher has been in decline (Burke et al., 2018).

[9] To note that the I-WeBS data available is for Dublin Bay as a whole and includes counts carried out at South Dublin Bay and River Tolka Estuary SPA.

[10] To note that the I-WeBS data available is for Dublin Bay as a whole and includes counts carried out at South Dublin Bay and River Tolka Estuary SPA.

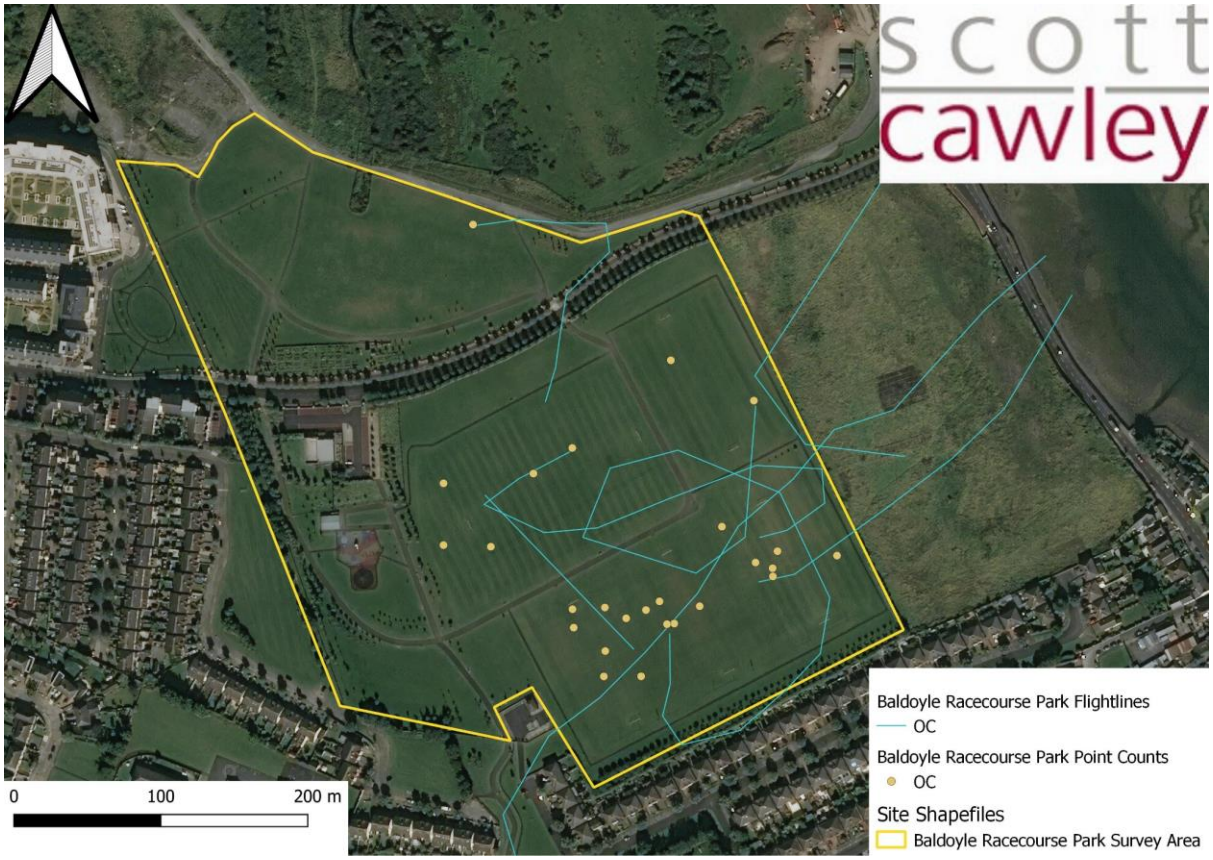
[11] From information on Oystercatcher *Haematopus ostralegus* published on the BirdWatch Ireland website https://birdwatchireland.ie/birds/oystercatcher/. Accessed 18th March 2021.

4.6.2 Field Survey Results for Oystercatcher

63 Flocks of oystercatcher were observed foraging on the Baldoyle Racecourse Park lands on eight of the 12 survey dates between January 2022 and April 2022. The peak count of foraging oystercatcher recorded on the lands was 45 birds on 06th January 2022. Oystercatcher and Brent Goose favoured the same portion of the lands in the central, eastern and southern sections and they were occasionally recorded in mixed flocks with each other.

64 Oystercatcher were observed flying over the lands on six survey dates, in January, February and March. They were generally recorded in small flocks of 1-3 birds and were recorded flying throughout the Baldoyle Racecourse Park lands in a south-east – north-west direction (or vice-versa). The peak count of oystercatcher recorded flying over the lands was 32 birds which was on the 13th January 2022.

Figure 12: Oystercatcher activity in the survey area



4.6.3 Oystercatcher at Baldoyle Racecourse Park in the context of European sites within 20km

65 In relation to wintering populations of the species in the vicinity, the peak count of 45no. birds in the Baldoyle Racecourse Park lands potentially represents:

- 1.3% of the wintering population in Dublin Bay, referencing the I-WeBS mean peak count of 3,419 birds for the period 2015/16-2019/20.
- 4.3% of the wintering population in Malahide Estuary, referencing the I-WeBS mean peak count of 1,050 birds for the period 2015/16-2019/20.
- 3.2% of the wintering population in Rogerstown Estuary, referencing the I-WeBS mean peak count of 1,382 birds for the period 2015/16-2019/20.

66 According to Nagy & Langendoen (2018), 1% of the international population of oystercatcher is 8,200 birds. The peak count of birds utilising the survey area did not reach or exceed this number in the 2020/21 survey season.

4.7 Grey Heron *Ardea cinerea* [A028]

4.7.1 Results of Desk Study for Grey Heron

67 There are no European sites for which grey heron is an SCI species within the vicinity of the Baldoyle Racecourse Park lands. The closest European sites which includes grey heron as a designating feature is Wexford Harbour and Slobs SPA (004076), c. 103.5km south of the Baldoyle Racecourse Park lands. Grey herons, although they have an extensive geographic range, are generally sedentary in Ireland, meaning they do not travel long distances between their breeding and wintering grounds[12], and for this reason, the population of birds in the Baldoyle Racecourse Park lands are not considered to be part of any European site population.

4.7.2 Field Survey Results for Grey Heron

68 A single grey heron was observed once on the ground within the Baldoyle Racecourse Park lands, within a vegetated culvert along the northern boundary of survey area 2, recorded on 15th March 2021.

Figure 13: Grey Heron activity in the survey area

[12] From information on Grey Heron *Ardea cinerea* published on the BirdWatch Ireland website https://birdwatchireland.ie/birds/grey-heron/ . Accessed 12th March 2021

4.8 Common Gull *Larus canus* [A182]

4.8.1 Results of Desk Study for Common Gull

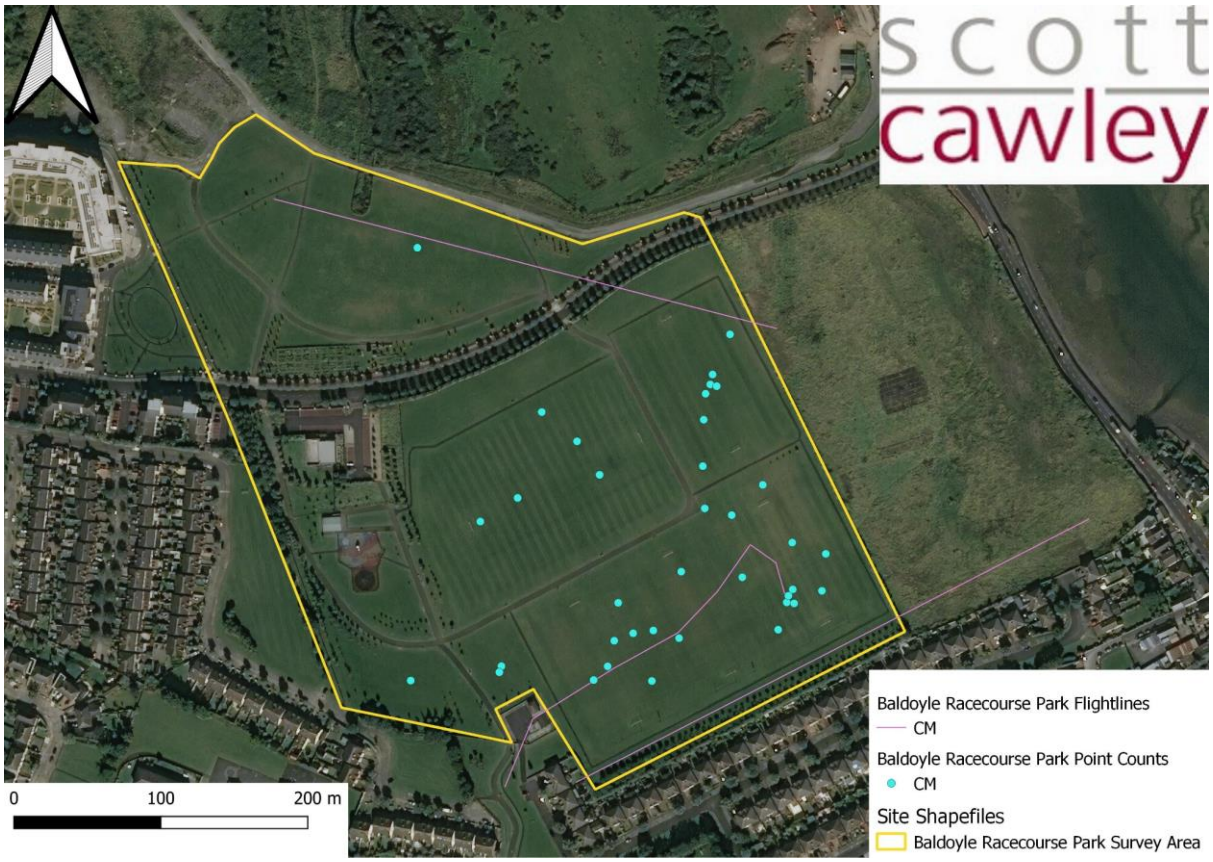
69 There are no European sites for which common gull is an SCI species within the vicinity of the Baldoyle Racecourse Park lands. The closest European site which includes common gull as a designating feature is Dundalk Bay SPA, c. 53.2km north of the Baldoyle Racecourse Park lands. It is not considered likely that common gull associated with Dundalk Bay SPA would be present in the vicinity of the Baldoyle Racecourse Park lands, given the separation distance, however other gull species including herring gull are known to forage up to 54km from their breeding sites[13] and therefore there is potential for Common Gull recorded within Baldoyle Racecourse Park lands to be associated with Dundalk Bay SPA.

4.8.2 Field Survey Results for Common Gull

70 Common gull were observed foraging or on the ground at Baldoyle Racecourse Park lands on seven of the 12 survey dates, all of which recorded between January and March 2022. Common Gull were usually recorded as small flocks of 3-6 birds, with a peak count of 39 individuals recorded on the 15th February 2022 on the playing pitch in the south eastern corner of Baldoyle Racecourse Park.

71 Common gull were observed flying over the Baldoyle Racecourse Park lands on three of the 12 survey dates, as individuals or in small flocks. The peak count of Common Gull flying over the Baldoyle Racecourse lands was 2 individuals on the 08th April 2022, recorded flying over the north-eastern portion of the park lands.

Figure 14: Common Gull activity in the survey area



[13] BirdLife International (2022) Species factsheet: Larus argentatus. Downloaded from http://www.birdlife.org on 28/07/2022.

4.9 Black-tailed Godwit *Limosa Limosa*

4.9.1 Results of Desk Study for Black-tailed Godwit

72 Black-tailed Godwit *Limosa limosa* [A156] is a SCI species for which the following European sites within 20km of the Baldoyle Racecourse Park lands have been designated:

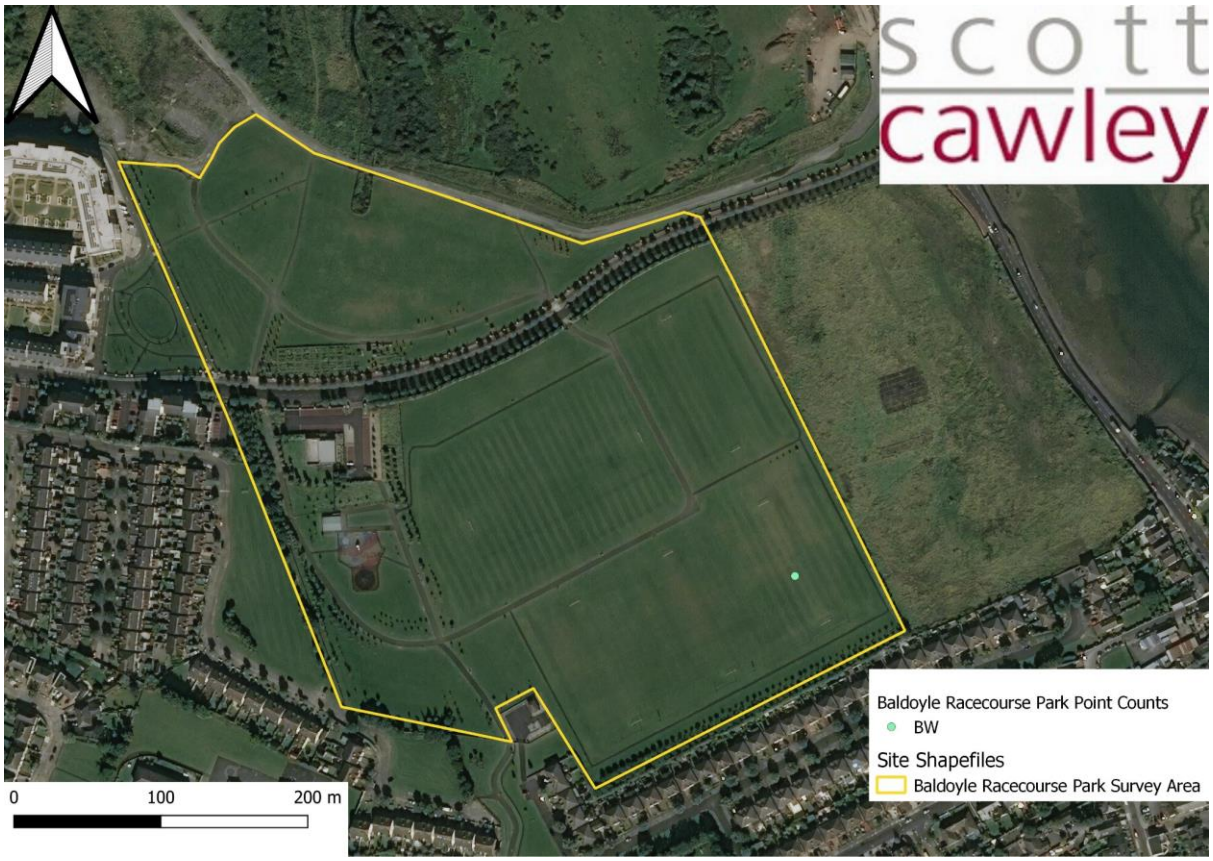
- North Bull Island SPA (004006), *c.* 1.2km south. This European site encompasses the coastal fringes of Bull Island, and surrounding intertidal and coastal zones extending between the North Bull wall in the south and Howth Head in the north. The baseline population of black-tailed godwit in the European site, based on the five-year mean peak counts for the period 1995/96-1999/2000, is listed as 367 birds in the Conservation Objectives Supporting Document (NPWS, 2014). North Bull Island SPA (004006) is the 19th most important site in Ireland for wintering black-tailed godwit and is of international importance for the species (NPWS, 2014). The Dublin Bay flock has increased in size relative to the baseline population for the SPA based on review of recent I-WeBS data for the site (mean peak count for the years 2015/16 to 2019/20 is 2,038)[14].
- Malahide Estuary SPA (004025), *c.* 4.4km north. This European site encompasses the Malahide Estuary and Broadmeadow Water and surrounding coastal habitats. The baseline population for Black-tailed Godwit at this European site is 409 birds, based on the five-year mean peak counts for the period 1995/96-1999/2000 (NPWS, 2013a). Malahide Estuary SPA is listed as the 16th most important site for wintering black-tailed godwit in Ireland and is of international importance for the species (NPWS, 2013a). The Malahide Estuary flock has decreased in size relative to the baseline population for the SPA based on review of recent I-WeBS data for the site (mean peak count for the years 2015/16 to 2019/20 is 387).
- Rogerstown Estuary SPA (004015), *c.* 10km north. The baseline population for Black-tailed Godwit at this European site is 195 birds, based on the five-year mean peak counts for the period 1995/96-1999/2000 (NPWS, 2013b). Rogerstown Estuary SPA is listed as the 23rd most important site for wintering black-tailed godwit in Ireland. The Rogerstown Estuary flock has increased in size relative to the baseline population for the SPA based on review of recent I-WeBS data for the site (mean peak count for the years 2015/16 to 2019/20 is 963).

4.9.2 Field Survey Results for Black-tailed Godwit

73 Black-tailed Godwit were observed on the ground at Baldoyle Racecourse Park lands on a single survey date, 8th February 2022. The peak count of 17 individuals roosting was recorded at this time in the south-eastern corner of the Baldoyle Park Lands. This flock entered the site from the direction of Baldoyle Bay.

[14] To note that the I-WeBS data available is for Dublin Bay as a whole and includes counts carried out at South Dublin Bay and River Tolka Estuary SPA.

Figure 15 Black-tailed Godwit activity in the survey area



4.9.3 Black-tailed godwit at Baldoyle Racecourse Park in the context of European sites within 20km

74 In relation to wintering populations of the species in the vicinity, the peak count of 17no. birds in the Baldoyle Racecourse Park lands potentially represents:

- 0.8% of the wintering population in Dublin Bay, referencing the I-WeBS mean peak count of 2,038 birds for the period 2015/16-2019/20.
- 4.4% of the wintering population in Malahide Estuary, referencing the I-WeBS mean peak count of 387 birds for the period 2015/16-2019/20.
- 1.8% of the wintering population in Rogerstown Estuary, referencing the I-WeBS mean peak count of 963 birds for the period 2015/16-2019/20.

75 According to Nagy & Langendoen (2018), 1% of the international population of black-tailed godwits is 1,100 birds. The peak count of birds utilising the survey area did not reach or exceed this number in the 2020/21 survey season.

4.10 Other Bird Species of Note

76 During the wintering bird surveys a number of other bird species were recorded on the survey lands. Of note was the presence of a single raptor species foraging in rough grassland to the north of the Baldoyle Park Lands, which is green-listed in Ireland[15] i.e. buzzard Buteo buteo.

[15] Gilbert G., Stanbury A. and Lewis L. (2021), "Birds of Conservation Concern in Ireland 2020 –2026". Irish Birds 9: 523—544

5 Conclusions

77 Observations of a single season of wintering bird survey in the Baldoyle Racecourse Park lands have been contextualised against the populations of these species in nearby European sites. In the case of black-headed gull, herring gull, lesser black-backed gull, curlew, oystercatcher, grey heron, common gull and Black-tailed Godwit, it has been assessed that the peak count of birds in the survey area in 2020/21 is less than 1% of the international population of these species. However, Light-bellied brent goose was recorded on 2 occasions (6th January and 8th March 2022) as having a peak count of greater than 1% of the international population of this species.

78 Therefore, Baldoyle Racecourse Park lands are utilised by internationally important numbers of light-bellied brent goose, with a higher frequency of use noted within the mid-late winter season (i.e. January – March). Of note here also, is the *ad hoc* level of interchange by Brent Goose, recorded between the Baldoyle Racecourse Park lands and the amenity grassland area immediately to the south, at Seagrange Park, where by when birds were disturbed from one area they actively moved to the other to attempt to forage.

References

Benson, L. (2009). *Use of Inland Feeding Sites by Light-bellied Brent Geese in Dublin 2008-2009: A New Conservation Concern?* Irish Birds 8: 563-570.

Burke, B., Lewis, L., Fitzgerald, N., Font, T., Austin, G., Tierney, D. (2018). *Estimates of waterbird numbers wintering in Ireland, 2011/12-2015/16.* Available from: https://www.researchgate.net/publication/337089291_Estimates_of_waterbird_numbers_wintering_in_Ireland_201112-201516

Enviroguide (2019). *Natura Impact Statement for Proposed Strategic Housing Development at St. Paul's College, Sybil Hill Road, Raheny, Dublin*

Nagy, S. & Langendoen, T. (2018). *Report on the Conservation Status of Migratory Waterbirds in the Agreement Area. Seventh Edition.*

NPWS (2020a). *Natura 2000 Standard Data Form: IE0004117 Ireland's Eye SPA.* National Parks and Wildlife Service, Dublin.

NPWS (2020b). *Natura 2000 Standard Data Form: IE0004069 Lambay Island SPA.* National Parks and Wildlife Service, Dublin.

NPWS (2020c). *Natura 2000 Standard Data Form: IE0004122 Skerries Islands SPA.* National Parks and Wildlife Service, Dublin.

NPWS (2020d). *Natura 2000 Standard Data Form: IE0004043 Lough Derravaragh SPA.* National Parks and Wildlife Service, Dublin.

NPWS (2014). *Conservation Objectives Supporting Document: North Bull Island SPA (Site Code 4006) & South Dublin Bay and River Tolka Estuary SPA (Site Code 4024)*. Version 1. National Parks and Wildlife Service, Dublin.

NPWS (2013a). *Conservation Objectives Supporting Document: Malahide Estuary SPA (Site Code 4025)*. Version 1. National Parks and Wildlife Service, Dublin.

NPWS (2013b). *Conservation Objectives Supporting Document: Rogerstown Estuary SPA (Site Code 4015)*. Version 1. National Parks and Wildlife Service, Dublin

NPWS (2012). *Conservation Objectives Supporting Document: Baldoyle Estuary SPA (Site Code 4016)*. Version 1. National Parks and Wildlife Service, Dublin.

O'Briain M., Healy B. (1991). *Winter distribution of Light-bellied Brent Geese, 1981/82 to 1990/91*. Irish Birds 4, 229 – 316.

Scott Cawley (2017). *Natura Impact Statement: Information for Stage 2 Appropriate Assessment – Proposed Residential Development, St. Paul's College, Sybil Hill, Raheny, Dublin 5*. Report produced for Crekav by Scott Cawley.

Scottish Natural Heritage (2016) Guidance: Assessing connectivity with Special Protection Areas (SPAs). Version 3

Appendix I – Desk Study Results

Records of wetland birds for which European sites have been designated for O23 10km Grid Square, returned from the National Biodiversity Data Centre Database (Desk search carried out on 10th March 2021)

Appendix I - Table 1: Wetland bird records from the 10km grid square O23 and 024, as returned from the NBDC

Species name	Record count O23	Date of last record	Record count 024	Date of last record
Arctic Tern *Sterna paradisaea*	18	24/05/2014	6	04/05/2021
Atlantic Puffin *Fratercula arctica*	2	10/06/1999	10	10/07/2021
Bar-tailed Godwit *Limosa lapponica*	38	07/03/2018	10	31/12/2011
Black Guillemot *Cepphus grille*	39	01/05/2021	15	10/07/2021
Black Tern *Chlidonias niger*	2	20/08/2012	n/a	n/a
Black-headed Gull Chroicocephalus ridibundus	139	16/03/2021	31	27/02/2021
Black-legged Kittiwake *Rissa tridactyla*	74	26/06/2020	44	10/07/2021
Black-tailed Godwit *Limosa limosa*	58	16/03/2021	15	27/02/2021
Black-throated Diver *Gavia arctica*	1	29/02/1984	2	31/12/2011
Brent Goose *Branta bernicla*	60	01/05/2021	28	11/04/2021
Common Coot *Fulica atra*	5	15/05/2016	6	31/12/2011
Common Eider *somateria mollissima*	1	19/04/2020	1	31/12/2001
Common Goldeneye *Bucephala clangula*	8	31/12/2011	9	31/12/2011
Common Greenshank *Tringa nebularia*	48	16/03/2021	12	07/03/2021
Common Gull *Larus canus*	83	16/03/2021	24	27/02/2021
Common Guillemot *Uria aalge*	78	26/06/2020	24	10/07/2021
Common Kingfisher *Alcedo atthis*	12	31/122011	8	31/12/2011
Common Pochard *Aythya ferina*	4	31/12/2011	6	31/12/2011
Common Redshank *Tringatotanus*	85	16/03/2021	25	07/03/2021
Common Scoter *Melanitta nigra*	9	31/12/2011	11	12/03/2021
Common Shelduck *Tadorna tadorna*	54	16/03/2021	36	07/05/2021
Common Tern *Sterna hirundo*	47	24/05/2015	3	04/05/2021
Dunlin *Calidris alpina*	51	16/01/2019	14	31/12/2011
Eurasian Curlew *Numenius arquata*	73	14/08/2021	29	30/06/2021
Eurasian Oystercatcher *Haematopus ostralegus*	88	19/02/2020	38	04/05/2021
Eurasian Teal *Anas crecca*	55	16/03/2021	17	07/03/2021
Eurasian Wigeon *Anas penelope*	31	12/01/2019	18	07/03/2021
European Golden Plover *Pluvialis apricaria*	16	16/03/2021	8	31/12/2011
European Shag *Phalacrocorax aristotelis*	58	12/01/2019	29	10/06/2017

Species name	Record count O23	Date of last record	Record count 024	Date of last record
Gadwall *Anas strepera*	4	31/12/2011	2	31/12/2011
Great Black-backed Gull *Larus marinus*	84	26/06/2020	32	19/01/2017
Great Cormorant *Phalacrocorax carbo*	101	26/06/2020	31	10/07/2021
Great Crested Grebe *Podiceps cristatus*	43	13/01/2018	13	12/03/2021
Great Northern Diver *Gavia immer*	12	01/05/2021	7	12/03/2021
Greater Scaup *Aythya marila*	5	31/12/2011	3	31/12/2011
Grey Heron *Ardea cinerea*	77	16/03/2021	31	27/02/2021
Grey Plover *Pluvialis squatarola*	27	07/03/2018	8	31/12/2011
Hen Harrier *Circus cyaneus*	2	31/12/2011	n/a	n/a
Herring Gull *Larus argentatus*	157	08/05/2021	42	10/07/2021
Lesser Black-backed Gull *Larus fuscus*	45	08/05/2021	21	08/03/2021
Little Egret *Egretta garzetta*	80	16/03/2021	22	27/02/2021
Little Gull *Larus minutus*	7	13/01/2018	4	19/01/2017
Little Tern *Sternula albifrons*	4	31/12/2001	3	31/07/1991
Long-tailed Duck *Clangula hyemalis*	7	31/12/2011	3	31/12/2011
Mallard *Anas platyrhynchos*	51	16/03/2021	38	27/02/2021
Manx Shearwater *Puffinus puffinus*	20	13/01/2018	4	04/05/2021
Mediterranean Gull *Larus melanocephalus*	12	29/08/2012	6	31/12/2011
Merlin *Falco columbarius*	11	16/01/2019	4	31/12/2011
Northern Fulmar *Fulmarus glacialis*	25	26/06/2020	13	10/07/2021
Northern Gannet *Morus bassanus*	32	01/05/2021	32	11/04/2021
Northern Lapwing *Vanellus vanellus*	17	16/11/2014	18	07/03/2021
Northern Pintail *Anas acuta*	25	13/01/2018	9	31/12/2011
Northern Shoveler *Anas clypeata*	21	07/03/2018	6	31/12/2011
Peregrine Falcon *Falco peregrinus*	19	26/06/2020	9	01/06/2021
Pink-footed Goose *Ancer brachyrhynchus*	n/a	n/a	2	27/02/2021
Purple Sandpiper *Calidris maritima*	n/a	n/a	2	31/12/2011
Razorbill *Alca torda*	26	26/06/2020	16	23/05/2014
Red Knot *Calidris canutus*	38	13/01/2018	9	31/12/2011
Red-breasted Merganser *Mergus serrator*	25	16/03/2021	9	31/12/2011
Red-necked Phalarope *Phalaropus lobatus*	2	10/09/1957	n/a	n/a
Red-throated Diver *Gavia stellata*	13	13/01/2018	8	04/05/2021
Ringed Plover *Charadrius hiaticula*	28	29/08/2012	19	04/05/2021
Roseate Tern *Sterna dougallii*	12	29/08/2012	1	31/07/1991

Species name	Record count O23	Date of last record	Record count 024	Date of last record
Ruff *Philomachus pugnax*	1	11/01/2018	3	31/12/2011
Sanderling *Calidris alba*	25	16/01/2019	11	31/12/2011
Sandwich Tern *Sterna sandvicensis*	17	24/05/2014	5	12/03/2021
Tufted Duck *Aythya fuligula*	4	31/12/2011	5	31/12/2011
Velvet Scooter *Melanitta fusca*	n/a	n/a	2	31/12/2001
Whooper swan *Cygnus cygnus*	2	31/12/2011	6	10/12/2018

Appendix II – Results of Survey Observations

Activity codes: HU – Hunting/Feeding; WA – Walking; FL – Flying; OG – On ground; GL – Gliding; PE – Perching; SO – Soaring; PR – Preening; WP – With prey; SW – Swimming; RO – Roosting

Height bands: Band 1: 0-10m; Band 2: 11-20m; Band 3: 21-35m; Band 4: 36-50m; Band 5: >50m

Appendix II - Table 1: Record of survey observations –flight lines.

Date	Time	BTO Code	Common Name	No. of Birds	Height	Behaviour	End Flight
06/01/2022	08:56	BG	Brent Goose	180	30	Flushed from site, flew to marsh	Flew out of site
06/01/2022	09:14	BG	Brent Goose	225	30	Flushed from main pitch by dog off leash	Landed on southern pitch within site
06/01/2022	13:43	BG	Brent Goose	30	25	Flushed offside by loose dog	Flew offside to SW
06/01/2022	13:45	OC	Oystercatcher	19	15	Flushed off southern pitch by loose dog, circled and landed on Eastern pitches	Landed on site
06/01/2022	15:08	BG	Brent Goose	64	20	Transit	Landed on site
06/01/2022	15:15	CU		2	10	Transit	Flew out of site
06/01/2022	15:34	BG	Brent Goose	C.400	30	Transit from SW to site	Attempted landing, chased off by 2 young boys, flew back SW
06/01/2022	15:36	BG	Brent Goose	C.400	25	Abandoned attempted landing due to disturbance	Flew out of site to SW
13/01/2022	10:25	OC	Oystercatcher	32	5-10	Flushed from central pitch to SE pitch	Landed on site
13/01/2022	10:25	CU	Curlew	1	20	Transit	Flew out of site
13/01/2022	12:03	BG	Brent Goose	120	35	Transit	Land off site in estuary
13/01/2022	12:03	BG	Brent Goose	55	35	Transit	Landed off site in estuary
13/01/2022	12:14	CM	Common Gull	1	5-10	Flushed/transit	Flew out of sight
13/01/2022	12:14	BH	Black-headed Gull	1	5-10	Flushed/transit	Flew out of sight
13/01/2022	12:26	BG	Brent Goose	20	35	Transit	Flew out of sight to SW
13/01/2022	12:26	BH	Black-headed Gull	13	5-10	Transit	Flew out of sight
13/01/2022	14:31	BG	Brent Goose	6	25	Transit	Flew out of sight
13/01/2022	14:51	OC	Oystercatcher	1	5	Transit	Flew out of sight

13/01/2022	14:51	BH	Black-headed Gull	1	5	Flushed from main pitch by dog	Landed on site
21/01/2022	08:56	BG	Brent Goose	8	25	Transit	Landed on site
21/01/2022	09:03	BG	Brent Goose	14	25	Transit	Landed on site
21/01/2022	09:14	BG	Brent Goose	31	30	Transit	Flew out of sight
21/01/2022	09:11	BG	Brent Goose	24	30	Flushed by dog	Flew out of sight
21/01/2022	09:24	BG	Brent Goose	14	30	Transit	Flew out of sight
21/01/2022	09:27	BG	Brent Goose	18	30	Transit	Flew out of sight
21/01/2022	09:30	BG	Brent Goose	93	30	Transit	Flew out of sight
21/01/2022	09:37	BG	Brent Goose	9	20	Transit	Flew out of sight
21/01/2022	09:41	BG	Brent Goose	12	20	Transit	Flew out of sight
21/01/2022	10:25	BG	Brent Goose	33	20	Transit	Landed in estuary
21/01/2022	13:40	BG	Brent Goose	7	20	Transit	Landed onsite
21/01/2022	14:06	BG	Brent Goose	110	20	Transit	Landed onsite
21/01/2022	14:29	BG	Brent Goose	5	20	Transit	Landed onsite
21/01/2022	14:37	BG	Brent Goose	40	20	Transit	Landed onsite
21/01/2022	14:58	BG	Brent Goose	170	20	Flush by dog	Landed offsite to SW
21/01/2022	15:19	BG	Brent Goose	180	20	Transit	Landed onsite
21/01/2022	15:26	BG	Brent Goose	180	20	Flushed from main park	Landed on northern grassland
25/01/2022	10:06	BG	Brent Goose	11	15m	Transit	Flew out of sight
25/01/2022	10:20	HG	Herring Gull	1	20m	Transit	Flew out of sight
25/01/2022	10:29	BG	Brent Goose	21	30m	Transit	Flew out of sight
25/01/2022	10:29	BG	Brent Goose	10	30m	Transit	Flew out of sight
25/01/2022	10:42	OC	Oystercatcher	3	1m	Transit	Landed
25/01/2022	10:52	BG	Brent Goose	6	20m	Transit	Flew out of sight
25/01/2022	10:52	BG	Brent Goose	2	20m	Transit	Flew out of sight
25/01/2022	10:54	BG	Brent Goose	2	20m	Transit	Flew out of sight
25/01/2022	11:02	BG	Brent Goose	5	10m	Transit	Flew out of sight
25/01/2022	11:07	BG	Brent Goose	10	30m	Transit	Flew out of sight
25/01/2022	11:12	BG	Brent Goose	12	20m	Transit	Flew out of sight
25/01/2022	11:15	BG	Brent Goose	5	30m	Transit	Flew out of sight
25/01/2022	11:45	BG	Brent Goose	162	15m	Transit	Landed

25/01/2022	12:00	BG	Brent Goose	177	3m	Transit	Landed
25/01/2022	12:11	BG	Brent Goose	177	20m	Transit	Flew out of sight
25/01/2022	12:45	BG	Brent Goose	9	30m	Transit	Flew out of sight
25/01/2022	15:06	BG	Brent Goose	30	30m	Transit	Flew out of sight
25/01/2022	15:22	BG	Brent Goose	135	10m	Transit	Flew out of sight
25/01/2022	15:27	BG	Brent Goose	88	20m	Transit	Landed
25/01/2022	15:35	BG	Brent Goose	88	20m	Transit	Flew out of sight
25/01/2022	15:51	BG	Brent Goose	39	20m	Transit	Landed
25/01/2022	15:56	BG	Brent Goose	10	20m	Transit	Landed- joined flock
25/01/2022	16:03	BG	Brent Goose	14	20m	Transit	Landed- joined flock
25/01/2022	16:07	BG	Brent Goose	51	20m	Transit	Flew out of sight
08/02/2022	10:10	BG	Brent Goose	4	10	Transit	Landed on site
08/02/2022	10:23	BG	Brent Goose	42	30	Transit	Landed on site
08/02/2022	10:23	BG	Brent Goose	7	20	Transit	Landed on site
08/02/2022	10:23	BG	Brent Goose	12	20	Flushed offsite	Landed offsite in estuary
08/02/2022	10:23	BG	Brent Goose	C. 60	30	Flushed offsite	Flew out of sight
08/02/2022	10:23	BG	Brent Goose	15	20	Flushed offsite	Flew out of sight, landed to south-west
08/02/2022	11:05	BG	Brent Goose	7	15	Transit	Flew over site landing to SW
08/02/2022	11:52	BG	Brent Goose	33	25	Transit	Flew over site landing to SW
08/02/2022	12:26	BG	Brent Goose	11	20	Transit	Flew over site landing to SW
08/02/2022	12:49	CU	Curlew	1	10	Transit	Flew over site landing to NE
08/02/2022	12:52	OC	Oystercatcher	3	10	Transit	landed onsite
08/02/2022	14:47	BG	Brent Goose	6	10	Transit	landed onsite
08/02/2022	14:55	BG	Brent Goose	67	20	Transit	landed onsite
08/02/2022	14:47	BG	Brent Goose	63	20	Transit	landed onsite
08/02/2022	15:24	BG	Brent Goose	252		Flushed from pitch by dog	landed onsite on other side of pitch

08/02/2022	15:35	BG	Brent Goose	150	20	Transit	Flushed offsite, landed to SW
15/02/2022	08:44	MA		2	15m	Tranist	Flew out of sight
15/02/2022	08:57	BG	Brent Goose	5	10m	Transit	Flew out of sight
15/02/2022	08:57	BG	Brent Goose	5	10m	Transit	Landed
15/02/2022	09:14	BG	Brent Goose	16	10m	Transit	Attempted landing, flew out of sight
15/02/2022	09:35	BH	Black-headed Gull	18	5m	Transit	Flew out of sight
15/02/2022	09:43	HG	Herring Gull	1	20m	Transit	Flew out of sight
15/02/2022	10:59	BG	Brent Goose	2	20m	Transit	Flew out of sight
15/02/2022	11:28	GB	Great Black-backed Gull	1	20m	Transit	Flew out of sight
15/02/2022	11:01	HG	Herring Gull	1	20m	Transit	Flew out of sight
15/02/2022	12:47	HG	Herring Gull	1	20m	Transit	Flew out of sight
15/02/2022	13:29	BG	Brent Goose	5	30m	Transit	Flew out of sight
15/02/2022	13:52	BH	Black-headed Gull	1	5m	Transit	Landed
15/02/2022	14:26	BH	Black-headed Gull	1	30m	Transit	Flew out of sight
15/02/2022	14:01	HG	Herring Gull	3	30m	Transit	Flew out of sight
15/02/2022	14:30	BH	Black-headed Gull	2	20m	Transit	Flew out of sight
15/02/2022	14:33	HG	Herring Gull	2	40m	Transit	Flew out of sight
15/02/2022	14:42	BH	Black-headed Gull	5	40m	Transit	Flew out of sight
15/02/2022	14:55	BG	Brent Goose	4	30m	Transit	Flew out of sight
15/02/2022	14:56	CM	Common Gull	1	40m	Transit	Flew out of sight
15/02/2022	15:01	BG	Brent Goose	2	30m	Transit	Flew out of sight
15/02/2022	15:02	BG	Brent Goose	8	30m	Transit	Flew out of sight
15/02/2022	15:03	HG	Herring Gull	2	40m	Transit	Flew out of sight
15/02/2022	15:05	BG	Brent Goose	1	25m	Transit	Flew out of sight
15/02/2022	15:11	BG	Brent Goose	12	25m	Transit	Flew out of sight
15/02/2022	15:21	HG	Herring Gull	1	30m	Transit	Flew out of sight
24/02/2022	08:32	BH	Black-headed Gull	7	5m	Transit	Flew out of sight
24/02/2022	08:47	HG	Herring Gull	1	30m	Transit	Flew out of sight
24/02/2022	08:56	HG	Herring Gull	1	20m	Transit	Flew out of sight
24/02/2022	08:59	BG	Brent Goose	14	20m	Transit	Landed

24/02/2022	10:27	GB	Great Black-backed Gull	1	20m	Transit	Flew out of sight
24/02/2022	12:00	BH	Black-headed Gull	12	20m	Transit	Flew out of sight
24/02/2022	12:25	HG	Herring Gull	2	20m	Transit	Flew out of sight
24/02/2022	12:26	BH	Black-headed Gull	12	5m	Transit	Flew out of sight
24/02/2022	12:38	BG	Brent Goose	3	20m	Transit	Flew out of sight
24/02/2022	12:47	OC	Oystercatcher	2	20m	Transit	Flew out of sight
24/02/2022	12:55	HG	Herring Gull	1	20m	Transit	Flew out of sight
24/02/2022	13:02	BG	Brent Goose	75	20m	Transit	Flew out of sight
24/02/2022	13:31	BH	Black-headed Gull	1	2m	Transit	Landed
24/02/2022	13:36	BG	Brent Goose	220	40m	Transit	Flew out of sight
24/02/2022	13:47	HG	Herring Gull	1	30m	Transit	Flew out of sight
24/02/2022	14:17	HG	Herring Gull	1	30m	Transit	Flew out of sight
24/02/2022	14:51	HG	Herring Gull	3	5m	Transit	Flew out of sight
24/02/2022	14:52	HG	Herring Gull	2	20m	Transit	Flew out of sight
24/02/2022	14:56	HG	Herring Gull	1	20m	Transit	Flew out of sight
08/03/2022	09:34	BG	Brent Goose	6	15m	Transit	Landed
08/03/2022	09:39	BG	Brent Goose	4	15m	Transit	Landed
08/03/2022	09:46	BG	Brent Goose	8	15m	Transit	Landed
08/03/2022	09:51	BG	Brent Goose	6	15m	Transit	Landed
08/03/2022	09:58	BG	Brent Goose	464	15m	Transit	Flew out of sight
08/03/2022	10:09	BG	Brent Goose	4	15m	Transit	Flew out of sight
08/03/2022	10:11	BG	Brent Goose	18	15m	Transit	Landed
08/03/2022	10:19	HG	Herring Gull	2	30m	Transit	Flew out of sight
08/03/2022	10:21	BG	Brent Goose	14	30m	Transit	Flew out of sight
08/03/2022	11:36	HG	Herring Gull	1	20m	Transit	Flew out of sight
08/03/2022	14:48	BG	Brent Goose	120	20m	Transit	Landed
08/03/2022	14:59	BG	Brent Goose	43	20m	Transit	Landed
08/03/2022	15:15	BG	Brent Goose	50	20m	Transit	Landed
08/03/2022	15:58	BG	Brent Goose	726	20m	Transit	Flew out of sight
15/03/2022	09:23	HG	Herring Gull	2	10	In transit	Flew out of sight
15/03/2022	09:32	BG	Brent Goose	2	20	In transit	Flew out of sight, landed in estuary

15/03/2022	11:13	HG	Herring Gull	2	15	In transit	Flew out of sight, landed in estuary
15/03/2022	11:20	HG	Herring Gull	2	20	In transit	Flew out of sight
15/03/2022	11:20	OC	Oystercatcher	1	5	In transit	Landed on site
15/03/2022	11:54	BG	Brent Goose	3	20	In transit	Flew out of sight, landed in estuary
15/03/2022	14:09	HG	Herring Gull	3	15	In transit	Flew out of sight
15/03/2022	15:09	BG	Brent Goose	4	25	In transit	Flew out of sight
15/03/2022	15:51	BG	Brent Goose	11	25	In transit	Flew out of sight
22/03/2022	10:00	HG	Herring Gull	13	10m	Transit	Flew out of sight
22/03/2022	10:28	GB	Great Black-backed Gull	1	30m	Transit	Flew out of sight
22/03/2022	10:33	BZ	Buzzard	1	40m	Transit	Flew out of sight
22/03/2022	10:33	HG	Herring Gull	1	40m	Transit	Flew out of sight
22/03/2022	10:44	HG	Herring Gull	2	30m	Transit	Flew out of sight
22/03/2022	11:05	H.	Grey Heron	1	20m	Transit	Flew out of sight
22/03/2022	12:51	HG	Herring Gull	1	30m	Transit	Flew out of sight
22/03/2022	14:37	BH	Black-headed Gull	6	20m	Transit	Flew out of sight
22/03/2022	14:48	HG	Herring Gull	1	30m	Transit	Flew out of sight
22/03/2022	14:51	GB	Great Black-backed Gull	1	30m	Transit	Flew out of sight
22/03/2022	14:52	HG	Herring Gull	3	30m	Transit	Flew out of sight
22/03/2022	15:04	HG	Herring Gull	1	20m	Transit	Flew out of sight
22/03/2022	15:05	HG	Herring Gull	1	30m	Transit	Flew out of sight
22/03/2022	15:11	HG	Herring Gull	2	30m	Transit	Flew out of sight
22/03/2022	15:18	HG	Herring Gull	2	30m	Transit	Flew out of sight
22/03/2022	15:28	HG	Herring Gull	1	15m	Transit	Flew out of sight
22/03/2022	15:54	HG	Herring Gull	1	30m	Transit	Flew out of sight
22/03/2022	16:23	HG	Herring Gull	9	30m	Transit	Flew out of sight
01/04/2022	12:00	BZ	Buzzard	1	10	In transit	Landed in hedgerow
01/04/2022	12:13	BZ	Buzzard	1	10-15	In transit	Flew out of sight
01/04/2022	12:35	GB	Great Black-backed Gull	1	10	In transit	Flew out of sight
01/04/2022	12:47	HG	Herring Gull	3	20	In transit	Flew out of sight
01/04/2022	14:09	HG	Herring Gull	2	20	In transit	Flew out of sight

01/04/2022	14:30	HG	Herring Gull	1	20	In transit	Flew out of sight
01/04/2022	15:24	HG	Herring Gull	1	10	In transit	Flew out of sight
01/04/2022	15:04	HG	Herring Gull	2	10	In transit	Flew out of sight
01/04/2022	15:14	HG	Herring Gull	1	10	In transit	Flew out of sight
01/04/2022	15:36	HG	Herring Gull	2	15	In transit	Flew out of sight
01/04/2022	15:37	HG	Herring Gull	2	15	In transit	Flew out of sight
01/04/2022	15:39	HG	Herring Gull	1	5	In transit	Flew out of sight
01/04/2022	15:40	HG	Herring Gull	1	5	In transit	Landed on site
01/04/2022	15:49	HG	Herring Gull	1	5	In transit	Flew out of site
01/04/2022	16:04	HG	Herring Gull	1	15	In transit	Flew out of site
01/04/2022	16:05	HG	Herring Gull	1	50	In transit	Flew out of site
08/04/2022	10:16	HG	Herring Gull	12	15m	Transit	Flew out of sight
08/04/2022	10:43	BH	Black-headed Gull	2	15m	Transit	Flew out of sight
08/04/2022	11:04	HG	Herring Gull	3	25m	Transit	Flew out of sight
08/04/2022	11:29	CM	Common Gull	2	25m	Transit	Flew out of sight
08/04/2022	11:37	HG	Herring Gull	1	20m	Transit	Flew out of sight
08/04/2022	14:04	HG	Herring Gull	4	20m	Transit	Flew out of sight
08/04/2022	14:19	HG	Herring Gull	1	20m	Transit	Flew out of sight
08/04/2022	14:38	GB	Great Black-backed Gull	1	20m	Transit	Flew out of sight
08/04/2022	14:44	MA	Mallard	1	10m	Transit	Flew out of sight
08/04/2022	14:58	GB	Great Black-backed Gull	1	20m	Transit	Flew out of sight
08/04/2022	15:10	HG	Herring Gull	1	20m	Transit	Flew out of sight
08/04/2022	15:18	HG	Herring Gull	3	20m	Transit	Flew out of sight
08/04/2022	15:31	HG	Herring Gull	6	20m	Transit	Flew out of sight
08/04/2022	15:55	HG	Herring Gull	1	20m	Transit	Flew out of sight
08/04/2022	16:11	HG	Herring Gull	1	20m	Transit	Flew out of sight
08/04/2022	16:33	HG	Herring Gull	2	20m	Transit	Flew out of sight
08/04/2022	16:54	HG	Herring Gull	1	25m	Transit	Flew out of sight
08/04/2022	16:22	BG	Brent Goose	198	10m	Transit	Landed on site
08/04/2022	16:29	BG	Brent Goose	5	10m	Transit	Landed on site
08/04/2022	16:35	BG	Brent Goose	7	10m	Transit	Landed on site
08/04/2022	16:54	BG	Brent Goose	210	10m	Transit	Flew out of sight

Appendix II - Table 2: Record of survey observations –flocks on the ground.

Date	BTO Code	BTO Name	Max. Count	Activity	Habitat
06/01/2022	BH	Black-headed Gull	9	F	Amenity grassland
06/01/2022	BG	Brent Goose	180	Foraging	Amenity Grassland
06/01/2022	OC	Oystercatcher	8	Foraging	Amenity Grassland
06/01/2022	BG	Brent Goose	225	Foraging	Amenity Grassland
06/01/2022	CM	Common Gull	38	Foraging	Amenity Grassland
06/01/2022	BH	Black-headed Gul	13	Foraging	Amenity Grassland
06/01/2022	OC	Oystercatcher	15	Foraging	Amenity Grassland
06/01/2022	BG	Brent Goose	480	Foraging	Amenity Grassland
06/01/2022	CU	Curlew	1	Foraging	Amenity Grassland
06/01/2022	CM	Common Gull	28	Foraging	Amenity Grassland
06/01/2022	BG	Brent Goose	30	Foraging	Amenity Grassland
06/01/2022	OC	Oystercatcher	26	Foraging	Amenity Grassland
06/01/2022	OC	Oystercatcher	19	Foraging	Amenity Grassland
06/01/2022	OC	Oystercatcher	19	Foraging	Amenity Grassland
06/01/2022	BG	Brent Goose	10	Foraging	Amenity Grassland

06/01/2022	H.	Grey Heron	1	Foraging	Stream/ edge of culvert
06/01/2022	OC	Oystercatcher	45	Foraging	Amenity Grassland
06/01/2022	OC	Oystercatcher	28	Foraging	Amenity Grassland
06/01/2022	BH	Black-headed Gull	9	Foraging	Amenity Grassland
06/01/2022	CM	Common Gull	3	Foraging	Amenity Grassland
06/01/2022	CM	Common Gull	9	Foraging	Amenity Grassland
06/01/2022	HG	Herring Gull	2	Roosting	Amenity Grassland
06/01/2022	BG	Brent Goose	64	Foraging	Amenity Grassland
13/01/2022	CM	Common Gull	9	Foraging	Amenity Grassland
13/01/2022	BH	*Black-headed Gull*	2	Foraging	Amenity Grassland
13/01/2022	*OC*	*Oystercatcher*	*16*	*Foraging*	*Amenity Grassland*
13/01/2022	*OC*	*Oystercatcher*	*15*	*Foraging*	*Amenity Grassland*
13/01/2022	*CM*	*Common Gull*	*7*	*Foraging*	*Amenity Grassland*
13/01/2022	*BH*	*Black-headed Gull*	*2*	*Foraging*	*Amenity Grassland*
13/01/2022	*BH*	*Black-headed Gull*	*1*	*Foraging*	*Amenity Grassland*
13/01/2022	*OC*	*Oystercatcher*	*32*	*Foraging*	*Amenity Grassland*
13/01/2022	*BZ*	*Buzzard*	*1*	*Foraging*	*Grassland edge/ scrub*

13/01/2022	*CM*	*Common Gull*	*1*	*Foraging*	*Amenity Grassland*
13/01/2022	*BH*	*Black-headed Gull*	*1*	*Foraging*	*Amenity Grassland*
13/01/2022	*BH*	*Black-headed Gull*	*1*	*Foraging*	*Amenity Grassland*
13/01/2022	*BH*	*Black-headed Gull*	*1*	*Foraging*	*Amenity Grassland*
13/01/2022	*BH*	*Black-headed Gull*	*1*	*Foraging*	*Amenity Grassland*
13/01/2022	*BH*	*Black-headed Gull*	*1*	*Foraging*	*Amenity Grassland*
21/01/2022	*BG*	*Brent*	*2*	*Foraging*	*Amenity Grassland*
21/01/2022	*CM*	*Common Gull*	*8*	*Foraging*	*Amenity Grassland*
21/01/2022	*BH*	*Black-headed Gull*	*2*	*Foraging*	*Amenity Grassland*
21/01/2022	*CM*	*Common Gull*	*5*	*Foraging*	*Amenity Grassland*
21/01/2022	*BG*	*Brent Goose*	*24*	*Foraging*	*Amenity Grassland*
21/01/2022	*BH*	*Black-headed Gull*	*1*	*Foraging*	*Amenity Grassland*
21/01/2022	*CM*	*Common Gull*	*6*	*Foraging*	*Amenity Grassland*
21/01/2022	*BH*	*Black-headed Gull*	*3*	*Foraging*	*Amenity Grassland*
21/01/2022	*CM*	*Common Gull*	*3*	*Foraging*	*Amenity Grassland*
21/01/2022	*CM*	*Common Gull*	*5*	*Foraging*	*Amenity Grassland*
21/01/2022	*CM*	*Common Gull*	*11*	*Foraging*	*Amenity Grassland*

21/01/2022	*BH*	*Black-headed Gull*	*1*	*Foraging*	*Amenity Grassland*
21/01/2022	*BG*	*Brent Goose*	*7*	*Foraging*	*Amenity Grassland*
21/01/2022	*BG*	*Brent Goose*	*170*	*Foraging*	*Amenity Grassland*
21/01/2022	*BG*	*Brent Goose*	*180*	*Foraging*	*Amenity Grassland*
21/01/2022	*BG*	*Brent Goose*	*180*	*Foraging*	*Amenity Grassland*
25/01/2022	*OC*	*Oystercatcher*	*8*	*Foraging*	*GA2*
25/01/2022	*CM*	*Common gull*	*5*	*Foraging*	*GA2*
25/01/2022	*CM*	*Common gull*	*3*	*Foraging*	*GA2*
25/01/2022	*CM*	*Common gull*	*7*	*Foraging*	*GA2*
25/01/2022	*CM*	*Common gull*	*6*	*Foraging*	*GA2*
25/01/2022	*CM*	*Common gull*	*3*	*Foraging*	*GA2*
25/01/2022	*BH*	*Black-headed gull*	*2*	*Foraging*	*GA2*
25/01/2022	*BH*	*Black-headed gull*	*4*	*Foraging*	*GA2*
25/01/2022	*CM*	*Common gull*	*1*	*Foraging*	*GA2*
25/01/2022	*BH*	*Black-headed gull*	*1*	*Foraging*	*GA2*
25/01/2022	*BG*	*Brent goose*	*172*	*Foraging*	*GA2*
25/01/2022	*BG*	*Brent goose*	*177*	*Foraging*	*GA2*

25/01/2022	*BG*	*Brent goose*	*162*	*Foraging*	*GA2*
25/01/2022	*OC*	*Oystercatcher*	*10*	*Foraging*	*GA2*
25/01/2022	*BG*	*Brent goose*	*88*	*Foraging*	*GA2*
25/01/2022	*OC*	*Oystercatcher*	*8*	*Foraging*	*GA2*
25/01/2022	*BG*	*Brent goose*	*88*	*Foraging*	*GA2*
08/02/2022	*BG*	*Brent Goose*	*38*	*Foraging*	*Recreational grassland*
08/02/2022	*BH*	*Black-headed gull*	*2*	*Foraging*	*Recreational grassland*
08/02/2022	*OC*	*Oystercatcher*	*1*	*Foraging*	*Recreational grassland*
08/02/2022	*BH*	*Black-headed gull*	*1*	*Foraging*	*Recreational grassland*
08/02/2022	*BH*	*Black-headed gull*	*1*	*Foraging*	*Recreational grassland*
08/02/2022	*BG*	*Brent Goose*	*80*	*Foraging*	*Recreational grassland*
08/02/2022	*CM*	*Common Gull*	*1*	*On ground*	*Recreational grassland*
08/02/2022	*CM*	*Common Gull*	*5*	*On ground*	*Recreational grassland*
08/02/2022	*BH*	*Black-headed gull*	*3*	*On ground*	*Recreational grassland*
08/02/2022	*OC*	*Oystercatcher*	*5*	*On ground*	*Recreational grassland*
08/02/2022	*CM*	*Common Gull*	*5*	*On ground*	*Recreational grassland*
08/02/2022	*OC*	*Oystercatcher*	*3*	*Foraging*	*Recreational grassland*

08/02/2022	*BH*	*Black-headed gull*	*4*	*Foraging*	*Recreational grassland*
08/02/2022	*OC*	*Oystercatcher*	*8*	*Foraging*	*Recreational grassland*
08/02/2022	*CM*	*Common Gull*	*21*	*Foraging*	*Recreational grassland*
08/02/2022	*BH*	*Black-headed gull*	*6*	*Foraging*	*Recreational grassland*
08/02/2022	*BW*	*Black-tailed Godwit*	*17*	*Foraging*	*Recreational grassland*
08/02/2022	*BG*	*Brent Goose*	*24*	*Foraging*	*Recreational grassland*
08/02/2022	*OC*	*Oystercatcher*	*16*	*Foraging*	*Recreational grassland*
08/02/2022	*BH*	*Black-headed gull*	*21*	*Foraging*	*Recreational grassland*
08/02/2022	*CM*	*Common Gull*	*13*	*Foraging*	*Recreational grassland*
08/02/2022	*CM*	*Common Gull*	*13*	*Foraging*	*Recreational grassland*
08/02/2022	*CM*	*Common Gull*	*13*	*Foraging*	*Recreational grassland*
08/02/2022	*BG*	*Brent Goose*	*252*	*Foraging*	*Recreational grassland*
08/02/2022	*BH*	*Black-headed gull*	*1*	*On ground*	*Recreational grassland*
08/02/2022	*BH*	*Black-headed gull*	*1*	*On ground*	*Recreational grassland*
08/02/2022	*BH*	*Black-headed gull*	*7*	*On ground*	*Recreational grassland*
08/02/2022	*BH*	*Black-headed gull*	*10*	*On ground*	*Recreational grassland*
08/02/2022	*BH*	*Black-headed gull*	*8*	*On ground*	*Recreational grassland*

08/02/2022	*CM*	*Common Gull*	*8*	*On ground*	*Recreational grassland*
08/02/2022	*CM*	*Common Gull*	*21*	*On ground*	*Recreational grassland*
08/02/2022	*BG*	*Brent Goose*	*104*	*Foraging*	*Recreational grassland*
08/02/2022	*OC*	*Oystercatcher*	*7*	*Foraging*	*Recreational grassland*
08/02/2022	*OC*	*Oystercatcher*	*7*	*Foraging*	*Recreational grassland*
08/02/2022	*CM*	*Common Gull*	*15*	*Foraging*	*Recreational grassland*
08/02/2022	*BH*	*Black-headed gull*	*16*	*Foraging*	*Recreational grassland*
08/02/2022	*BH*	*Black-headed gull*	*53*	*Foraging*	*Recreational grassland*
08/02/2022	*CM*	*Common Gull*	*36*	*Foraging*	*Recreational grassland*
08/02/2022	*BG*	*Brent Goose*	*12*	*Foraging*	*Recreational grassland*
08/02/2022	*OC*	*Oystercatcher*	*10*	*Foraging*	*Recreational grassland*
08/02/2022	*HG*	*Herring Gull*	*2*	*Foraging*	*Recreational grassland*
15/02/2022	*BH*	*Black-headed gull*	*3*	*Roosting*	*GA2*
15/02/2022	*CM*	*Common gull*	*37*	*Foraging*	*GA2*
15/02/2022	*BG*	*Brent goose*	*13*	*Foraging*	*GA2*
15/02/2022	*CM*	*Common gull*	*39*	*Foraging*	*GA2*
15/02/2022	*OC*	*Oystercatcher*	*11*	*Foraging*	*GA2*

15/02/2022	*CM*	*Common gull*	*4*	*Foraging*	*GA2*
15/02/2022	*CM*	*Common gull*	*3*	*Foraging*	*GA2*
15/02/2022	*CM*	*Common gull*	*8*	*Foraging*	*GA2*
15/02/2022	*BH*	*Black-headed gull*	*5*	*Roosting*	*GA2*
15/02/2022	*BH*	*Black-headed gull*	*13*	*Roosting*	*GA2*
24/02/2022	*BG*	*Brent goose*	*21*	*Foraging*	*GA2*
24/02/2022	*OC*	*Oystercatcher*	*20*	*Foraging*	*GA2*
24/02/2022	*BH*	*Black-headed gull*	*5*	*Foraging*	*GA2*
24/02/2022	*BG*	*Brent goose*	*55*	*Foraging*	*GA2*
24/02/2022	*OC*	*Oystercatcher*	*3*	*Foraging*	*GA2*
24/02/2022	*BH*	*Black-headed gull*	*11*	*Foraging*	*GA2*
24/02/2022	*BH*	*Black-headed gull*	*28*	*Roosting*	*GA2*
24/02/2022	*BG*	*Brent goose*	*10*	*Foraging*	*GA2*
08/03/2022	*BG*	*Brent goose*	*464*	*Foraging and roosting*	*GA2*
08/03/2022	*CM*	*Common gull*	*3*	*Foraging*	*GA2*
08/03/2022	*BH*	*Black-headed gull*	*3*	*Foraging*	*GA2*
08/03/2022	*OC*	*Oystercatcher*	*12*	*Foraging*	*GA2*

08/03/2022	*OC*	*Oystercatcher*	*14*	*Foraging*	*GA2*
08/03/2022	*BG*	*Brent Goose*	*726*	*Foraging*	*GA2*
08/03/2022	*CM*	*Common Gull*	*16*	*Foraging*	*GA2*
08/03/2022	*BH*	*Black-headed gull*	*11*	*Foraging*	*GA2*
08/03/2022	*HG*	*Herring gull*	*2*	*Foraging*	*GA2*
15/03/2022	*OC*	*Oystercatcher*	*1*	*On ground*	*Amenity Grassland*
01/04/2022	*LB*	*Lesser Black-backed gull*	*2*	*On ground*	*GA2*
01/04/2022	*HG*	*Herring Gull*	*1*	*On ground*	*GA2*
08/04/2022	*BG*	*Brent Goose*	*210*	*Foraging and roosting*	*GA2*
08/04/2022	*HG*	*Herring Gull*	*3*	*Foraging*	*GA2*

Appendix II - Table 3: Record of Survey Observations – Droppings Count.

Date	Transect No.	Stop No.	Dropping Count	Avg. Sward Height (cm)	% Grass Cover	% Forb Cover	% Bare Ground
06/01/2022	1	2	3	3	70	5	25
06/01/2022	1	3	1	3	85	0	15
06/01/2022	1	4	8	3	90	5	5
06/01/2022	1	5	4	3	95	5	0
06/01/2022	1	6	3	3	75	0	25
06/01/2022	1	7	4	3	90	5	5
06/01/2022	1	8	10	3	85	5	10
06/01/2022	3	4	5	3	95	5	0
06/01/2022	3	6	1	3	85	10	5
06/01/2022	3	7	8	3	95	5	0
06/01/2022	3	8	4	3	100	0	0
06/01/2022	4	2	4	2	85	5	10
06/01/2022	4	4	3	3	85	5	10
06/01/2022	4	6	5	3	90	0	10
06/01/2022	7	7	3	3	75	20	5
06/01/2022	7	9	3	3	80	15	5
06/01/2022	7	11	2	4	80	15	5
13/01/2022	1	5	1	3	90	5	5
13/01/2022	1	6	1	3	95	0	5
13/01/2022	1	9	3	3	90	0	10
13/01/2022	1	11	1	3	95	0	5
13/01/2022	1	12	1	3	85	5	10
13/01/2022	4	6	2	3	95	0	5
13/01/2022	4	9	3	3	95	0	5
13/01/2022	4	10	2	3	100	0	0
21/01/2022	1	4	7	3	85	0	15
21/01/2022	1	6	6	2	75	0	25
21/01/2022	1	8	10	2	85	0	15
21/01/2022	1	10	7	3	75	0	25

21/01/2022	3	4	2	3	95	5	0
21/01/2022	3	6	1	3	95	5	0
21/01/2022	4	2	2	2	90	5	5
21/01/2022	4	3	2	3	95	5	0
21/01/2022	4	5	6	3	90	5	5
21/01/2022	4	6	4	3	90	5	5
21/01/2022	5	2	1	3	85	15	0
25/01/2022	1	2	1	2	30	0	70
25/01/2022	1	7	5	2	90	5	5
25/01/2022	1	8	2	2	85	5	10
25/01/2022	1	9	17	2	65	5	30
25/01/2022	1	10	9	3	90	5	5
25/01/2022	4	4	3	3	85	5	10
25/01/2022	4	5	2	3	90	5	5
25/01/2022	4	6	1	4	90	5	5
25/01/2022	7	7	6	5	60	40	0
25/01/2022	7	9	1	12	80	20	0
06/02/2022	4	12	4	4	85	20	0
08/02/2022	1	4	4	3	90	5	5
08/02/2022	1	5	3	3	70	5	25
08/02/2022	1	6	11	3	90	5	5
08/02/2022	1	7	9	3	60	0	40
08/02/2022	1	8	5	3	65	5	30
08/02/2022	1	9	1	4	85	10	5
08/02/2022	1	10	4	2	85	5	10
08/02/2022	1	11	10	2	80	5	15
08/02/2022	1	13	2	2	75	5	20
08/02/2022	1	14	1	2	70	5	25
08/02/2022	3	2	4	3	90	5	5
08/02/2022	3	3	40	3	95	5	0
08/02/2022	3	4	29	3	95	5	0
08/02/2022	3	5	19	3	90	10	0

08/02/2022	3	6	11	3	95	5	0
08/02/2022	3	7	22	3	95	0	5
08/02/2022	4	2	8	3	75	5	20
08/02/2022	4	3	21	3	85	10	5
08/02/2022	4	4	18	3	90	5	5
08/02/2022	4	5	7	3	85	5	10
08/02/2022	4	6	14	3	90	5	5
08/02/2022	4	7	11	3	90	5	5
08/02/2022	4	8	12	3	90	5	5
08/02/2022	4	9	13	3	90	5	5
08/02/2022	4	10	9	3	85	10	5
08/02/2022	4	11	6	3	85	10	5
08/02/2022	5	3	1	3	70	25	5
08/02/2022	5	5	1	3	70	25	5
08/02/2022	5	6	1	3	85	15	0
08/02/2022	7	8	10	3	75	20	5
08/02/2022	7	10	13	3	70	30	0
08/02/2022	7	12	7	3	85	15	0
15/02/2022	1	2	5	3	45	5	50
15/02/2022	1	4	6	2	65	5	30
15/02/2022	1	5	19	2	85	5	10
15/02/2022	1	6	5	2	45	5	50
15/02/2022	1	8	5	2	80	5	15
15/02/2022	3	4	2	5	90	10	0
15/02/2022	3	5	14	6	95	5	0
15/02/2022	3	6	4	4	95	5	0
15/02/2022	3	7	3	4	95	5	0
15/02/2022	3	8	5	4	90	10	0
15/02/2022	4	2	5	4	60	0	40
15/02/2022	4	3	3	4	95	0	5
15/02/2022	4	4	12	4	95	0	5
15/02/2022	4	5	3	3	90	5	5

15/02/2022	4	6	8	3	90	5	5
15/02/2022	4	7	2	5	90	5	5
15/02/2022	4	8	1	4	85	5	10
15/02/2022	4	9	2	4	90	5	5
15/02/2022	7	4	5	3	65	35	0
15/02/2022	7	6	15	5	70	30	0
24/02/2022	1	2	6	4	65	0	35
24/02/2022	1	4	19	2	75	0	25
24/02/2022	1	5	1	4	100	0	0
24/02/2022	1	6	5	2	60	0	40
24/02/2022	1	8	3	3	85	0	15
24/02/2022	1	10	2	3	80	0	20
24/02/2022	3	8	3	7	95	0	5
24/02/2022	4	3	7	4	95	5	0
24/02/2022	4	4	7	3	90	10	0
24/02/2022	4	5	5	3	90	10	0
24/02/2022	4	6	1	4	90	10	0
24/02/2022	4	7	5	3	95	5	0
24/02/2022	4	8	3	3	100	0	0
24/02/2022	4	9	4	4	90	0	10
24/02/2022	4	10	3	5	90	0	10
24/02/2022	7	3	9	3	80	20	0
24/02/2022	7	5	3	4	95	5	0
08/03/2022	1	4	5	2	50	0	50
08/03/2022	1	5	6	2	90	0	10
08/03/2022	1	6	13	2	90	0	10
08/03/2022	1	7	2	2	85	0	15
08/03/2022	1	8	16	2	85	0	15
08/03/2022	1	9	14	2	90	0	10
08/03/2022	1	10	16	2	85	0	15
08/03/2022	3	1	1	8	95	0	5
08/03/2022	3	6	1	10	90	5	5

08/03/2022	4	3	2	3	95	0	5
08/03/2022	4	4	4	4	90	0	10
08/03/2022	4	5	4	5	90	0	10
08/03/2022	4	7	1	3	85	0	15
08/03/2022	4	8	2	3	80	0	20
15/03/2022	1	1	3	3	85	10	5
15/03/2022	1	2	2	3	80	5	15
15/03/2022	1	3	4	2	70	5	25
15/03/2022	1	5	3	2	85	10	5
15/03/2022	1	6	4	2	80	5	15
15/03/2022	1	7	3	2	80	15	5
15/03/2022	1	8	2	2	55	5	40
15/03/2022	1	9	2	2	65	5	30
15/03/2022	1	11	1	2	85	5	10
15/03/2022	1	12	4	2	80	5	15
15/03/2022	1	13	4	2	70	10	20
15/03/2022	1	14	4	2	70	5	25
15/03/2022	1	15	1	2	65	5	30
15/03/2022	2	1	1	2	65	20	15
15/03/2022	2	2	1	2	60	20	20
15/03/2022	2	3	3	3	75	15	10
15/03/2022	2	4	1	3	70	25	5
15/03/2022	3	3	1	3	90	5	5
15/03/2022	3	4	4	3	90	5	5
15/03/2022	3	5	4	3	90	5	5
15/03/2022	3	6	5	3	90	5	5
15/03/2022	3	7	12	3	90	5	5
15/03/2022	3	8	3	3	90	5	5
15/03/2022	3	9	8	3	95	5	0
15/03/2022	4	1	6	3	85	15	0
15/03/2022	4	2	4	3	85	10	5
15/03/2022	4	4	16	3	85	10	5

15/03/2022	4	5	9	3	90	5	5
15/03/2022	4	6	1	3	90	5	5
15/03/2022	4	7	3	3	90	5	5
15/03/2022	4	8	1	3	85	10	5
15/03/2022	4	9	8	3	85	10	5
15/03/2022	4	10	5	3	85	10	5
15/03/2022	4	11	1	3	85	10	5
15/03/2022	4	12	3	3	85	10	5
15/03/2022	7	4	2	3	80	15	5
15/03/2022	7	6	7	3	80	15	5
15/03/2022	7	8	9	3	80	15	5
15/03/2022	7	10	2	3	80	20	0
22/03/2022	1	2	3	2	50	0	50
22/03/2022	1	3	1	2	50	0	50
22/03/2022	1	4	21	2	75	0	25
22/03/2022	1	5	1	3	100	0	0
22/03/2022	1	6	6	2	50	0	50
22/03/2022	1	7	9	3	90	0	10
22/03/2022	1	8	2	4	50	0	50
22/03/2022	1	10	6	3	50	0	50
22/03/2022	3	3	3	4	90	5	5
22/03/2022	3	4	3	2	90	5	5
22/03/2022	3	6	1	6	90	10	0
22/03/2022	3	7	3	6	90	10	0
22/03/2022	4	3	4	2	95	5	0
22/03/2022	4	4	22	4	90	5	5
22/03/2022	4	5	2	2	85	5	10
22/03/2022	4	6	3	3	85	5	10
22/03/2022	4	7	9	2	95	0	5
22/03/2022	4	8	4	2	95	0	5
22/03/2022	4	9	3	3	90	0	10
08/04/2022	1	8	2	4	75	5	20