NATURA IMPACT STATEMENT

ON BEHALF OF

J. MURPHY (DEVELOPMENTS) LIMITED

FOR

PROPOSED RESIDENTIAL DEVELOPMENT

AT

LANDS AT FOSTERSTOWN NORTH, DUBLIN ROAD / R132, SWORDS, CO. DUBLIN

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1 INTRODUCTION

1.1 Background

Enviroguide Consulting was commissioned by J. Murphy (Developments) Limited to prepare an Appropriate Assessment Screening Report and subsequently a Natura Impact Statement (NIS), in respect of a Proposed Residential Development on lands at Fosterstown North, Dublin Road / R132, Swords, Co. Dublin. The AA Screening Report concluded that a degree of uncertainty exists that the Proposed Development may give rise to potentially significant effects on Malahide Estuary SPA and Malahide Estuary SAC. Therefore, the purpose of this Natura Impact Statement report is to provide information for the relevant competent authority to carry out a Stage 2 Appropriate Assessment in respect of the Proposed Development.

1.2 Legislative Context

Member States are required to designate Special Areas of Conservation (SACs) and Special Protected Areas (SPAs) under the EU Habitats and Birds Directives, respectively. SACs and SPAs are collectively known as 'European' or 'Natura 2000' Sites. An 'Appropriate Assessment' (AA) is a required assessment to determine the likelihood of significant impacts, based on best scientific knowledge, of any plans or projects on European Sites.

The Habitats Directive (92/43/EEC) seeks to conserve natural habitats and wild fauna and flora by the designation of SACs and the Birds Directive (79/409/EEC) seeks to protect birds of special importance by the designation of SPAs. It is the responsibility of each member state to designate SPAs and SACs, both of which will form part of Natura 2000, a network of protected sites throughout the European Community.

An Appropriate Assessment is required under Article 6 of the Habitats Directive where a project or plan may give rise to significant effects upon a European Site, and paragraphs 3 and 4 state that:

"*6(3) Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site, in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.*

6(4) If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted. Where the site concerned hosts a priority natural habitat type and/or a priority species, the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for the

environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest."

This AA Screening Report was conducted within this legislative framework and the published Department of Environment, Heritage and Local Government 2009 guidelines - "Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities (DEHLG. 2009, Revised February 2010)". The directives are transposed into Irish legislation by the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended).

As outlined in these, it is the responsibility of the proponent of the project to provide a comprehensive and objective Screening for NIS, which can then be used by the competent authority in order to conduct Stage 2 Appropriate Assessment (DEHLG, 2009).

1.3 Stages of AA

The AA process is a four-stage process, with issues and tests at each stage. An important aspect of the process is that the outcome at each successive stage determines whether a further stage in the process is required.

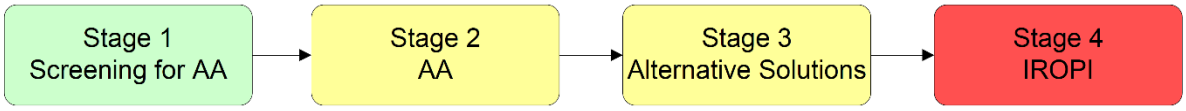

Figure 1. The four stages of the Appropriate Assessment Process (DEHLG, 2010).

The four stages of an AA, can be summarised as follows:

- Stage 1: *Screening*. The first stage of the AA process is to determine the likelihood of significant impacts of this proposal.
- **Stage 2: *Natura Impact Statement (NIS)***. The second stage of the AA process assesses the impact of the proposal (either alone or in combination with other projects or plans) on the integrity of the European Site, with respect to the conservation objectives of the site and its ecological structure and function. A Natura Impact Statement containing a professional scientific examination of the proposal is required and includes any mitigation measure to avoid, reduce or offset negative impacts.
- Stage 3: *Assessment of alternative solutions*. If the outcome of Stage 2 is negative i.e., adverse impacts to the sites cannot be scientifically ruled out, despite mitigation, the plan or project should proceed to Stage 3 or be abandoned. This stage examines alternative solutions to the proposal.
- Stage 4: *Assessment where no alternative solutions exist and where adverse impacts remain.* The final stage is the main derogation process examining whether there are imperative reasons of overriding public interest (IROPI) for allowing a plan or project to adversely affect a European Site, where no less damaging solution exists.

The Habitats Directive promotes a hierarchy of avoidance, mitigation and compensatory measures. First the project should aim to avoid any negative impacts on European sites by identifying possible impacts early in the planning stage and designing the project in order to

avoid such impacts. Second, mitigation measures should be applied, if necessary, during the AA process to the point where no adverse impacts on the site(s) remain. If the project is still likely to result in adverse effects, and no further practicable mitigation is possible, a refusal for planning permission may be recommended. In this case, the project will generally only be considered where no alternative solutions are identified and the project is required for imperative reasons of overriding public interest (IROPI test), or, in the case of priority habitats, considerations of health or safety, or beneficial consequences of primary importance for the environment or to other imperative reasons of overriding public interest. Then compensation measures are required for any remaining adverse effect.

2 CONCLUSION OF STAGE 1 SCREENING ASSESSMENT

The Appropriate Assessment Screening Report containing information for the purposes of Stage 1 Screening for AA is presented in a separate document with this application, the conclusions of which are presented as follows.

"In conclusion, upon the examination, analysis, and evaluation of the relevant information, and in applying the precautionary principle; it is concluded by the authors of this report that, on the basis of objective information, the possibility that the Proposed Development will have a significant effect on the following European Sites, noted to be linked by a Source-Pathway-Receptor impact pathway, cannot be excluded; due to the presence of a hydrological connection with the Site of the Proposed Development:

- *Malahide Estuary SAC [000205]*
- *Malahide Estuary SPA [004025]*

As such, a Stage 2 Appropriate Assessment has been carried out of the Proposed Development. A Natura Impact Statement (NIS) has been prepared and accompanies this application under separate cover"

These European Sites are assessed further as part of this NIS.

3 DESCRIPTION OF THE PROJECT

3.1 Description of Development

3.1.1 Brief Description

The Proposed Development comprises a Strategic Housing Development of 645 no. residential units (comprising of 208 no. 1 bedroom units, 410 no. 2 bedroom units, and 27 no. 3 bedroom units), in 10 no. apartment buildings, with heights ranging from 4 no. storeys to 10 no. storeys, including undercroft / basement levels (for 6 no. buildings). The proposals include 1 no. community facility in Block 1, 1 no. childcare facility in Block 3, and 5 no. commercial units (for Class 1-Shop, or Class 2- Office / Professional Services or Class 11-Gym or Restaurant / Café use, including ancillary takeaway use) in Blocks 4 and 8. The proposal includes all associated and ancillary development.
Please refer to the public notices for a detailed description of the Proposed Development.

3.1.2 Construction Phase

3.1.2.1 Construction Phase Surface Water

A Construction Environmental Management Plan (CEMP) has been prepared by Waterman Moylan Consulting Engineers Ltd., (WM) which details the surface water management measures that will be in place for the duration of the proposed works. These measures are in line with those recommended as mitigation in this NIS.

3.1.3 Operational Phase

3.1.3.1 Operational Surface Water

The Site currently drains to the Gaybrook Stream along its northern boundary. According to the Engineering Assessment Report (EAR) prepared by WM, Operational Phase surface water for the Proposed Development will be discharged at a restricted rate to this watercourse mimicking the existing greenfield run-off rates. Attenuation will be provided to restrict surface water runoff from to the equivalent of the existing greenfield runoff rate.

A suite of SUDS measures will treat surface water flows prior to their being discharged to the Gaybrook Stream. These measures will consist of filter drains, green roofs, permeable surfacing, detention basins, and an attenuation tank in the basement together with flow control devices and a petrol interceptor to treat run-off and remove pollutants to improve quality, restrict outflow and control quantity.

Strict separation of surface water and wastewater will be implemented within the Proposed Development.

3.1.3.2 Operational Foul Water

An updated Confirmation of Feasibility was received from Irish Water on 17 February 2021 which confirmed that the Proposed Development can be facilitated subject to sewer infrastructure upgrades. This system will discharge to the Swords Wastewater Treatment Plant (WWTP). The Swords WWTP was recently upgraded to increase treatment capacity from a population equivalent of 60,000 to a population equivalent of 90,000. The upgraded treatment plant will protect and improve quality of receiving waters at the inner Broadmeadow Estuary, using tertiary treatment by filtration, and disinfection using ultra-violet treatment and allow for population growth and economic development.

3.2 Existing Environment

The Site of the Proposed Development is located within the townland of Fosterstown North in Swords, Co. Dublin; *ca.*1.5km north of Dublin airport, and *ca.* 1.2km south of Swords Castle and Swords town centre. The M1 Motorway passes *ca.*1.5km to the east of the proposed site, while the R132 Swords bypass is located approximately 170m to the north-east. The lands are bounded along their entire eastern edge by the existing R132.

The Site area measures *ca*.4.4ha and is bordered to the south and west by residential areas, while across the road to the east lies a section of agricultural land which separates the Site from the Airside Retail Park. The Site's northern boundary is abounded by the *Gaybrook stream (North)* waterway with grass fields located beyond this waterway.

3.2.1 Geology & Hydrogeology

Fosterstown North is located within the *Swords* groundwater body. The overall status of this waterbody is recorded as *Good*. The groundwater rock units underlying the area are classified as *Dinantian Lower Impure Limestones,* while sub-soil at the site is classified as *Till derived from limestones* to the west and south of the site; *Gravels derived from Limestones* to the north-east; and a band of *Alluvium* running along the northern boundary, tracing the path of the *Gaybrook stream (North)* waterway*.* The site area is located on a *Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones* with groundwater vulnerability in the area listed as *Low.*

3.2.2 Hydrology

The Site of the Proposed Development is located within the *Broadmeadows_SC_010* sub-catchment and the *Ward_040* sub-basin. The closest waterbody to the project site, as mapped by the EPA, is the *Swords_Glebe* watercourse (EPA Code: 08S17) which runs *ca.*325m from the site's northern boundary. This watercourse flows for approximately 665m before linking up with the larger Ward River (EPA Code: 08W01) to the north-east. This watercourse flows another *ca.*2km before joining the *Broadmeadow 08* (EPA Code: 08B02), entering the Malahide estuary to the north a further *ca.*770m downstream. The EPA does not have any operational monitoring stations on the *Swords_Glebe* itself but does have a station *Ward_Br at SW end of Swords (Well rd Br)* (RS08W010500) on the Ward River approximately 885m from the proposed site's northern boundary. The most recent Q-value recorded at the station was *3*, with a Q-value status of *Poor*.

Another waterway, the *Gaybrook Stream (North),* is visible along the Site's northern boundary on the *OpenStreet maps* base-map via the EPA Online map resource (EPA, 2022). Although it is not present in EPA surface water layer in the above online resource, this waterway is in fact present running along the Site's northern boundary as confirmed by site visits. On the aforementioned *OpenStreet maps* base-map the *Gaybrook Stream (North)* can be seen to run *ca.*1.3km to the east before it disappears. Although the full length of the stream cannot be traced, and in taking a precautionary approach, it is assumed that this waterway joins up with the nearby waterbody of the same name the GAYBROOK (EPA code: 08G08); which runs parallel to it, *ca.*250m to the south of the point the *Gaybrook Stream (North)* disappears. The GAYBROOK waterbody then runs a further *ca*.3.3km from this point to where it enters the Malahide Estuary to the north-east: forming a potential connection to the European Sites therein.

The Site of the Proposed Development is comprised primarily of agricultural land in the form of a large arable stubble field. The following habitats (Fossitt, 2000) were identified within the Site of the Proposed Development during habitat surveys:

- Drainage ditch (FW4)
- Arable crops (BC1)
- Dry meadows and grassy verges (GS2) [Unmanaged]
- Scrub (WS1)
- Hedgerows (WL1)
- Treelines (WL2)
- Buildings and artificial surfaces (BL3)
- Amenity Grassland (GA2)

A number of non-native species was recorded within the above habitats, some of which are considered to be invasive, namely: butterfly bush (*Buddleja davidii*) and Himalayan Honeysuckle (*Leycesteria formosa*).

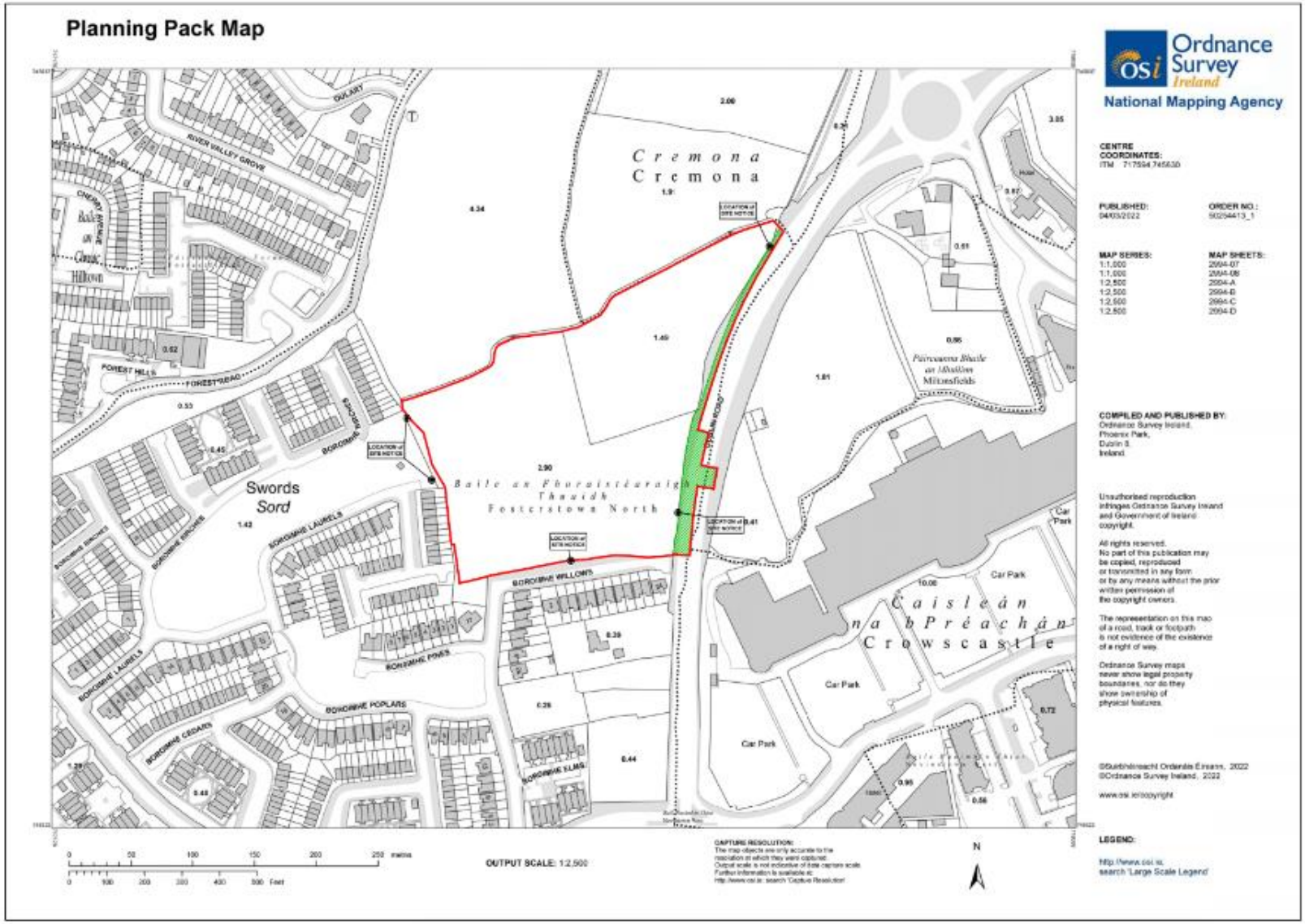

Figure 2. Site Location

Figure 3. Site Layout

4 METHODOLOGY

4.1 Desk Study

- A desktop study was carried out to collate and review available information, datasets and documentation sources relevant for the completion of the Natura Impact Statement. The desktop study, completed in April 2022, relied on the following sources:
- Information on the network of European Sites, relevant boundaries, qualifying interests and conservation objectives, obtained from the National Parks and Wildlife Service (NPWS) at *www.npws.ie* ;
- Information on the status of EU protected habitats and species in Ireland, obtained from the NPWS Article 17 reports (NPWS, 2013e & 2013f);
- Text summaries of the relevant European Sites taken from the respective Standard Data Forms and Site Synopsises for each site, available at *www.npws.ie* ;
- Information on species records and distributions, obtained from the National Biodiversity Data Centre (NBDC) at *www.maps.biodiversityireland.ie* ;
- Information on waterbodies, catchment areas and hydrological connections obtained from the Environmental Protection Agency (EPA) at *www.gis.epa.ie* ;
- Information on bedrock, groundwater, aquifers and their statuses, obtained from Geological Survey Ireland (GSI) at *www.gsi.ie* ;
- Satellite imagery and mapping obtained from various sources and dates including Google, Digital Globe, Bing and Ordinance Survey Ireland;
- Information on the extent, nature and location of the proposed development, provided by the applicant and their design team;
- Information on the construction methods to be followed as part of Proposed Development obtained from the Construction Environmental Management Plan (CEMP) prepared by Waterman Moylan Consulting Engineers;

The following guidance documents were consulted and followed in the completion of this Natura Impact Statement:

- *Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities.* (Department of Environment, Heritage and Local Government, 2010 revision);
- *Appropriate Assessment under Article 6 of the Habitats Directive: Guidance for Planning Authorities.* Circular NPW 1/10 & PSSP 2/10;
- *Assessment of Plans and Projects 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, 2001);
- *Communication from the Commission on the precautionary principle* (European Commission, 2000);
- *Managing Natura 2000 Sites: The Provisions of Article 6 of the Habitat's Directive 92/43/EEC* (European Commission, 2019).

- *Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC* Brussels, 28.9.2021 C (European Commission, 2021); and,
- *Appropriate Assessment Screening for Development Management, OPR Practice Note PN01,* (Office of the Planning Regulator, March 2021).

A comprehensive list of all the specific documents and information sources consulted in the completion of this report is provided in Section 10, References.

4.2 Site Surveys

The Site was visited by Enviroguide Consulting on multiple occasions between the 18th October 2019 and the 23rd March 2022. The Site was surveyed for any potentially important ecological receptors and/or potential impact pathways, to inform the completion of this report. The full suite of surveys conducted at the Site are listed as follows, the majority of which are relevant to and addressed in the EIAR Biodiversity chapter that accompanies this application under separate cover.

Table 1. Dates of ecological surveys carried out at the Site of the Proposed Development.

Ecological Survey	Survey Dates
Habitat/flora & Invasive flora surveys	18th October 2019, 23rd March 2022.
Mammal surveys	18th October 2019, 23rd March 2022.
Breeding bird survey	3rd March 2022, 23rd March 2022.
Amphibian walkover survey	23rd March 2022
Potential bat roost and habitat suitability survey	27th September 2021
Bat dusk activity survey	27th September 2021

4.2.1 Wintering Waterfowl/shorebird Surveys

A series of monthly vantage point surveys was carried out throughout the winter period of October 2020 to March 2021, to provide a comprehensive summary of the usage of the Site by SCI species for nearby SPAs. A total of 6 days of survey were carried out at the Site over the course of the 2020/21 winter, as detailed in Table 2.

A further three visits were conducted between January and March 2022 to confirm conditions at the Site had not changed (27/01/2022, 03/03/2022 & 23/03/2022). No SCI species were recorded utilising the Site during these visits.

Table 2. Winter Bird Survey dates at the Site of the Proposed Development over winter 2020/21

Winter Bird survey Dates

October 28th 2020
December 2nd 2020
December 16th 2020
January 12th 2021
February 2nd 2021
March 16th 2021

The survey methodology was as followed:

- Each survey day either commenced at dawn and continued for 6 hours or commenced 6 hours prior to dusk and ended at dusk. These timings were alternated each survey day to capture any possible temporal trends in the usage of the lands by SCI species.
- Each day, prior to the commencement of the survey, the lands were walked and checked for any obvious evidence of SCI species usage e.g., Light-bellied Brent Goose (LBBG) droppings.
- Each hour the Site was walked and observed for a period of approx. 20 mins with any SCI species activity on, or in flight over the Site recorded.
- All waterfowl and shorebird species that were observed visiting the Site or flying overhead were recorded, as were any other species of note e.g., rare passerines etc.

The findings of these surveys are discussed in detail in the Appropriate Assessment Screening Report that accompanies this application under sperate cover.

5 SUMMARY OF RELEVANT EUROPEAN SITES

A summary of each of the European Sites relevant for this assessment are given below; taken from the quality and importance section of the respective Natura 2000 Standard Data Form for each site.

5.1 Malahide Estuary SAC

"The site has an important example of intertidal sand and mud flats, with Zostera spp. Their quality is variable but generally good. Salt marshes are well represented, particularly Atlantic salt meadows and Salicornia flats. Most of the sand dune system is managed for a golf course but significant areas of fixed dunes and shifting white dunes remain. The site has Viola hirta, a Red Data Book plant species. It is of high importance for wintering waterfowl, with an internationally important population of Branta bernicla horta and nationally important populations of a further 14 species, including Pluvialis apricaria. It also supports a regionally important population of Limosa lapponica. This site has educational value and has been the subject of a number of research projects."

5.2 Malahide Estuary SPA

"The site is of high importance for wintering waterfowl and supports a particularly good diversity of species. It has an internationally important population of Branta bernicla hrota (4.8% of national total), and nationally important populations of a further 12 species. Of particular note are the populations of Tadorna tadorna (3.0% of national total), Anas acuta (2.9% of national total), Mergus serrator (2.8% of national total), Pluvialis squatarola (2.7% of national total) and Calidris canutus (3.7% of national total). The site is one of the few in eastern Ireland where substantial numbers of Bucephala clangula occur. It has a regionally important population of Limosa lapponica. The site is an important and regular site for a range of autumn passage migrants, especially Calidris ferruginea and Philomachus pugnax. It supports a regular flock of non-breeding Cygnus olor."

5.3 Qualifying Interests and Conservation Objectives

The "favourable conservation status" of a habitat or species is defined by Articles 1(e) and 1(i) of the Habitats Directive as follows:

"*The conservation status of a natural habitat is the sum of the influences acting on it and its typical species that may affect its long-term natural distribution, structure and functions as well as the long-term survival of its typical species. The conservation status of a natural habitat will be taken as favourable 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 conservation status of a species is the sum of the influences acting on the species that may affect the long-term distribution and abundance of its populations. The conservation status will be taken as 'favourable' when:

- *population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, 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.*"

The qualifying interests and respective conservation objectives for each of the nine relevant European Sites are detailed in Table 3 below.

Table 3. Qualifying interests and conservation Objectives for relevant European Sites.

Site Name	Qualifying Interests ** indicates a priority habitat under the Habitats Directive*	Conservation Objectives
Special Areas of Conservation (SACs)		
Malahide Estuary SAC [000205]	- [1140] Mudflats and sandflats not covered by seawater at low tide	**Habitat Area** The permanent habitat area is stable or increasing, subject to natural processes. **Community Extent** Maintain the extent of the *Zostera*-dominated community and the *Mytilus edulis*-dominated community complex, subject to natural processes. **Community Structure: *Zostera* density** Conserve the high quality of the Zostera-dominated community, subject to natural processes. **Community Structure: *Mytilus edulis* density** Conserve the high quality of the *Mytilus edulis* dominated community, subject to natural processes. **Community Distribution** Conserve the following community types in a natural condition: Fine sand with oligochaetes, amphipods, bivalves and polychaetes community complex; Estuarine sandy mud with Chironomidae and *Hediste diversicolor* community complex; and Sand to muddy sand with *Peringia ulvae, Tubificoides benedii* and *Cerastoderma edule* community complex.
	- [1310] *Salicornia* Mud - [1330] Atlantic Salt Meadows - [1410] Mediterranean Salt Meadows - [2120] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes)	**Habitat Area** Area stable or increasing, subject to natural processes, including erosion and succession. **Habitat Distribution**

	- [2130] Fixed coastal dunes with herbaceous vegetation (grey dunes)*	No decline, or change in habitat distribution, subject to natural processes. **Physical Structure: Sediment Supply** Maintain/ restore natural circulation of sediments and organic matter, without any physical obstructions. **Physical Structure: Creeks and Pans** Maintain [1310] [1410] /allow to develop [1330], creek and pan structure, subject to natural processes, including erosion and succession (Does not apply to [2120] [2130]). **Physical Structure: Flooding Regime** Maintain natural tidal regime (Does not apply to [2120] [2130]). **Vegetation Structure: Zonation** Maintain the range of coastal [1310] [1330] [2120] [2130] / saltmarsh [1410], habitats including transitional zones, subject to natural processes including erosion and succession. **Vegetation structure: Bare Ground** Bare ground should not exceed 10% of fixed dune habitat, subject to natural processes (Does not apply to [1310] [1330] [1410] [2120]). **Vegetation Structure: Vegetation Height** Maintain structural variation within sward (Does not apply to [2120] Shifting dunes). **Vegetation Structure: Vegetation Cover** Maintain more than 90% of the area outside of the creeks vegetated (Does not apply to [2120] Shifting dunes). **Vegetation composition: Plant health of dune grasses** 95% of marram grass (*Ammophila arenaria)* and/or lyme-grass (*Leymus arenarius*) should be healthy (i.e. green plant parts above ground and

		flowering heads present) (Does not apply to [1310] [1330] [1410] [2130]). **Vegetation Composition: Typical Species and Sub-communities** - Maintain range of sub-communities [1330] [1410] [2130]; and species-poor communities [1310], with typical species listed in the Saltmarsh Monitoring Project (McCorry and Ryle, 2009). - Maintain the presence of species-poor communities [2120] dominated by marram grass (*Ammophila arenaria*) and/or lymegrass (*Leymus arenarius*). **Vegetation Structure: Negative Indicator Species *Spartina anglica*** - No significant expansion of common cordgrass (*Spartina anglica*). No new sites for this species and an annual spread of less than 1% where it is already known to occur [1310] [1330] [1410]. - Negative indicator species (including non-natives) to represent less than 5% cover [2120] [2130]. **Vegetation composition: Scrub/Trees** No more than 5% cover or under control (Does not apply to [1310] [1330] [1410] [2120]).
	- [1320] Spartina swards (*Spartinion maritimae*)	"*Spartina swards (Spartinion maritimae) was originally listed as a qualifying Annex I habitat for Malahide Estuary SAC due to historical records of two rare forms of cordgrass– small cordgrass (Spartina maritima) and Townsend's cordgrass (S. x townsendii.). However, Preston et al. (2002) considers both forms to be alien. In addition, all stands of cordgrass in Ireland are now regarded as common cordgrass (S. anglica) (McCorry et al., 2003; McCorry and Ryle, 2009). As a consequence, a conservation objective has not been prepared for this habitat. It will therefore not be necessary to assess the likely effects of plans or projects against this Annex I habitat at this site"* (NPWS, 2013).
Special Protection Areas (SPAs)		

Malahide Estuary SPA [004025]	- [A005] Great Crested Grebe (*Podiceps cristatus*) [wintering] - [A046] Light-bellied Brent Goose (*Branta bernicla hrota*) [wintering] - [A048] Shelduck (*Tadorna tadorna*) [wintering] - [A054] Pintail (*Anas acuta*) [wintering] - [A067] Goldeneye (*Bucephala clangula*) [wintering] - [A069] Red-breasted Merganser (*Mergus serrator*) [wintering] - [A130] Oystercatcher (*Haematopus ostralegus*) [wintering] - [A140] Golden Plover (*Pluvialis apricaria*) [wintering] - [A141] Grey Plover (*Pluvialis squatarola*) [wintering] - [A143] Knot (Calidris canutus) [wintering] - [A149] Dunlin (*Calidris alpina*) [wintering] - [A156] Black-tailed Godwit (*Limosa limosa*) [wintering] - [A157] Bar-tailed Godwit (*Limosa lapponica*) [wintering] - [A162] Redshank (*Tringa totanus*) [wintering]	**Population Trend** Long term population trend stable or increasing **Distribution** No significant decrease in the range, timing or intensity of use of areas by said *species*, other than that occurring from natural patterns of variation.
	- [A999] Wetland and Waterbirds	**Habitat Area** The permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 765 hectares, other than that occurring from natural patterns of variation.

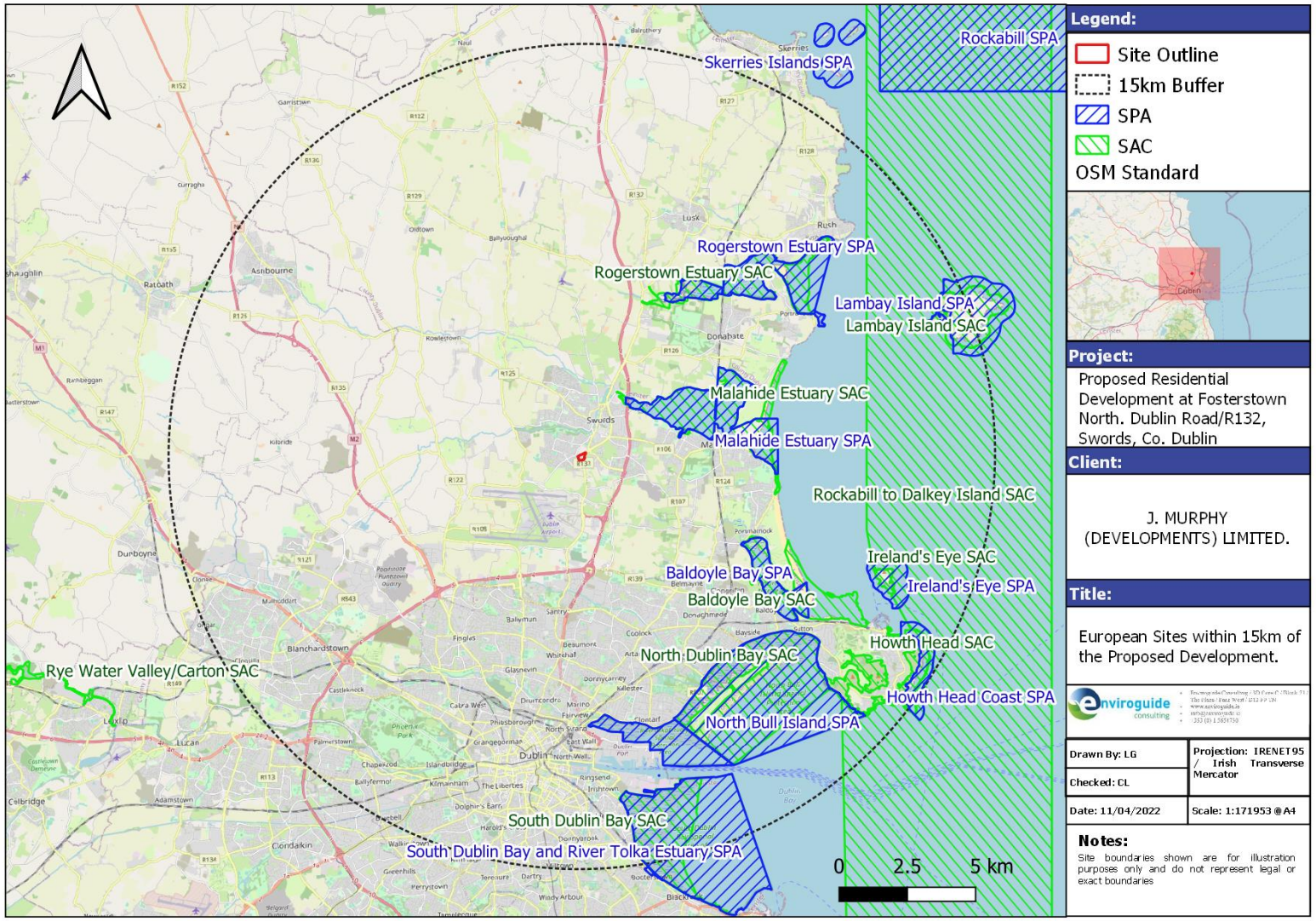

Figure 4. European Sites within 15km of the Proposed Development.

6 APPRAISAL OF POTENTIAL IMPACTS ON NATURA 2000 SITES

Table 4. Potential impacts to qualifying interests (QIs) of relevant European Sites

Qualifying Interest	Potential for Impact
Malahide Estuary SAC	
[1140] Mudflats and sandflats not covered by seawater at low tide	These habitats do not occur within the boundary of the Proposed Development and the Proposed Development will not involve the removal of any sections of this habitat from the SAC. However, a potential hydrological connection between the Site of the Proposed Development and the SAC has been identified during both the Construction and Operation Phase; via the Gaybrook stream which abounds the Site's northern boundary. On the OpenStreet maps EPA base-map the *Gaybrook Stream (North)* can be seen to run ca.1.3km to the east before it disappears. On a precautionary basis it is assumed that this waterway connects with the nearby waterbody of the same name the GAYBROOK (EPA code: 08G08). The GAYBROOK waterbody then runs a further ca.3.3km from this point to where it enters the Malahide Estuary SAC to the north-east. As a result there is the potential for: • Discharge/run-off of surface waters containing sediment, silt, oils and/or other pollutants during the Construction and Operation Phase of the Proposed Development into the stream and potentially reaching the SAC; and • Transport of invasive species of flora from the Site via this potential hydrological connection during the Construction Phase. It is therefore concluded that, in the absence of mitigation measures or further analysis, the possibility of significant effects on some or all of the qualifying interests of the Malahide Estuary SAC cannot be excluded in view of the relevant conservation objectives. **The potential for significant impacts is therefore assessed further in this report.**
[1310] *Salicornia* and other annuals colonizing mud and sand	
[1330] Atlantic Salt Meadows (*Glauco-Puccinellietalia maritimae*)	
[1410] Mediterranean Salt Meadows (*Juncetalia maritimi*)	
[2120] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes)	These habitats do not occur within the boundary of the Proposed Development. However, a potential impact has been identified in the form of the potential transportation of invasive flora species via the hydrological connection present, during the Construction Phase of the Proposed Development. **The potential for significant impacts is therefore assessed further in this report.**
[2130] Fixed coastal dunes with herbaceous vegetation (grey dunes)*	

Malahide Estuary SPA	
- [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*)	The Site of the Proposed Development is not deemed to be an important *ex-situ* roosting/foraging site for any of these SCI species. However, the impact assessment has identified a potential hydrological connection between the Site of the Proposed Development and the SPA via the Gaybrook stream which abounds the site's northern boundary. As a result, there is the possibility of discharge/run-off of surface waters containing sediment, silt, oils and/or other pollutants during the Operational and Construction Phases of the Proposed Development eventually reaching the SPA. It is therefore concluded that, in the absence of mitigation measures or further analysis, the possibility of significant effects on some or all of the qualifying interest species of the Malahide Estuary SPA cannot be excluded in view of the relevant conservation objectives. **The potential for significant impacts is therefore assessed further in this report.**
[A999] Wetland and Waterbirds	This Qualifying Interest does not occur within the boundary of the Proposed Development. However, the impact assessment has identified a potential pathway for surface waters containing sediment, silt, oils and/or other pollutants, and/or invasive flora species, during the Operational and Construction Phase of the Proposed Development, to eventually reach this wetland habitat via the Gaybrook Stream. It is therefore concluded that, in the absence of mitigation measures or further analysis, the possibility of significant effects on this QI cannot be excluded in view of the relevant conservation objectives. **The potential for significant impacts is therefore assessed further in this report.**

6.1 The Malahide Estuary SAC

Of the six qualifying interests for The Malahide Estuary SAC detailed in Table 4, the following four are water dependant habitats:

- *Mudflats and sandflats not covered by seawater at low tide* [1140]
- *Salicornia and other annuals colonizing mud and sand* [1310]
- *Atlantic salt meadows* [1330]
- *Mediterranean salt meadows* [1410]

There is therefore the potential for impacts on these habitats as a result of surface water run-off carrying suspended sediment/contaminants/fuel pollutants from the Site of the Proposed Development, entering the SAC during the Operational and Construction Phases of the Proposed Development.

In the case of the remaining two QI habitats; *[2120] Shifting dunes along the shoreline with Ammophila arenaria (white dunes)* and *[2130] Fixed coastal dunes with herbaceous vegetation (grey dunes)*, it is not considered that there is any potential risk of significant impacts associated with surface water run-off carrying suspended sediment/contaminants/fuel pollutants from the Site of the Proposed Development.

However, all 6 habitat types have the potential to be negatively impacted by the potential transport and diffusion of invasive flora species, via the hydrological connection present with the Site of the Proposed Development, during the Construction Phase.

The percentage coverages of the habitats listed for which a potential impact was identified, of the overall 809.3 ha covered by The Malahide Estuary SAC, are given in Table 5.

Table 5. Area covered by relevant QI habitats in relation to area encompassed by the Malahide SAC [NPWS (2017); Ryle et al. (2009); McCorry & Ryle, 2009)].

QI code	Qualifying Interest	Area (ha)	Percentage of total site (%)
[1140]	Mudflats and sandflats not covered by seawater at low tide	310.8	**38.4**
[1310]	Salicornia and other annuals colonizing mud and sand	1.9	**0.2**
[1330]	Atlantic salt meadows (*Glauco-Puccinellietalia maritime*)	26.2	**3.2**
[1410]	Mediterranean salt meadows (*Juncetalia maritim*i)	0.6	**0.07**
[2120]	Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes)	1.8	**0.2**
[2130]	Fixed coastal dunes with herbaceous vegetation (grey dunes)	21.4	**2.6**

6.1.1 Mudflats and Sandflats not covered by seawater at low tide

This habitat covers the majority of the SAC with a relatively small section located at the outflow of the Broadmeadow River; and the majority of this habitat located on the eastern side of the Malahide Viaduct and along both Donabate Beach and Malahide Beach. The closest section of this habitat type to the Site of the Proposed Development is *ca.*2.3km to the north-east, at the outflow of the Broadmeadow River.

However, the only identified potential hydrological connection between the Site of the Proposed Development and the SAC is the Gaybrook stream which abounds the Site to the north. This waterway flows into the Malahide Estuary *ca.*3.3km to the east of the Proposed Development and at this location there is no habitat conforming to the habitat type *'Mudflats and Sandflats not covered by seawater at low tide'.*

This absence, in addition to the intervening distance involved between the Proposed Development and the outflow of this potential hydrological connection makes the potential

for significant impacts to this habitat type unlikely. However, in the absence of suitable mitigation measures this very slight possibility cannot be ruled out.

6.1.2 Salicornia and other annuals colonizing mud and sand

This habitat is found in a few isolated locations in the north and east of the SAC; along the western and southern coasts of Malahide Island and the 'Island Golf Course'. The nearest section of this habitat to the Proposed Development is *ca.*5.3km to the east along the southern coast of Malahide Island, *ca.*2km from the outflow of the GAYBROOK waterbody into the estuary.

Due to the intervening distance involved between this habitat type and the outflow of the hydrological connection; and the intervening distance from the Proposed Development to the habitat type itself (*ca*.5.3km), it is considered that any potential significant impacts to this habitat type are highly unlikely. However, in the absence of suitable mitigation measures this very slight possibility cannot be ruled out.

6.1.3 Atlantic and Mediterranean Salt Meadows

The extent of the salt marsh habitat within The Malahide Estuary SAC was determined as part of the Saltmarsh Monitoring Project (McCory & Ryle, 2009). The Saltmarsh Monitoring Project was a nationwide survey carried out between 2007 and 2008 to meet the monitoring objectives of the Habitats Directive in relation to saltmarsh habitats in Ireland.

The closest Mediterranean Salt Meadows habitat to the Proposed Development was recorded approximately 6.4km to the north, at the elbow of Malahide Island in the north of the SAC; *ca.*3km from the outflow of the GAYBROOK waterbody into the estuary. It can therefore be considered that any potential for significant negative impacts to this QI habitat as a result of the Proposed Development is highly unlikely.

Atlantic Salt Meadows comprises the second most abundant Annex 1 habitat type listed as a QI for the SAC. Its area is made up of a number of small sections dispersed along the northern end of the SAC, a relatively significant section along the southern coast of Malahide Island and the 'Island Golf Course', as well as areas at the outflows of the Broadmeadow and GAYBROOK waterways, to the north and east of the Proposed Development respectively.

The closest of these areas in relation to the outflow of the potential hydrological connection between the SAC and the Proposed Development is located where the GAYBROOK meets the estuary, *ca.*3.5km to the east of the Site. Due to the intervening distance involved between the Proposed Development and the outflow of this potential hydrological connection it is considered that any potential significant impacts to this habitat type are unlikely. However, as a result of the proximity of this habitat type to the outflow of this hydrological connection; the potential for adverse impacts as a result of contaminated surface water input and/or transported invasive flora species cannot be ruled out.

6.1.4 Sand dune Habitats

The sand dune habitats of Malahide Estuary are predominantly located on 'Malahide Island' the land spit that shelters the estuary from the Irish Sea. The closest sections of *Shifting dunes along the shoreline with Ammophila Arenaria* and *Fixed coastal dunes with*

herbaceous vegetation dune habitats to the outflow of the GAYBROOK waterbody to the estuary are *ca.*1.7 and 1.9km respectively, on the other side of the Malahide Viaduct.

The overall objective for the *Shifting dunes along the shoreline with Ammophila Arenaria* and *Fixed coastal dunes with herbaceous vegetation* dune habitats in Malahide Estuary SAC is to 'restore the favourable conservation condition'. A potential impact has been identified in the form of the potential transport and diffusion of invasive flora species from the Site of the Proposed Development to the SAC via the hydrological connection potentially linking the two locations. Although it is considered unlikely that the introduction of invasive flora to the estuary would subsequently lead to significant adverse impacts to these dune habitats, in the absence of appropriate mitigatory measures the risk cannot be fully ruled out.

6.2 The Malahide Estuary SPA

Fourteen species of bird are listed as QI species for the Malahide Estuary SPA.

The Malahide Estuary SPA is located approximately 2.3km from the Site of the Proposed Development and encompasses a number of sub-sites included in the Irish Wetland Bird Survey (I-WeBS) and Waterbird Survey Programme 2011/12 respectively. These schemes monitor wintering wetland birds in Ireland. The Malahide Estuary sub-sites covered in the NPWS Waterbird Survey Programme 2011/12 are listed in Table 6 below.

Table 6. Malahide Estuary – Waterbird Survey Programme 2011/12 – Count Subsites. Sites in the vicinity of the GAYBROOK waterbody outflow shown in bold. (NPWS, 2013a)

Subsite Code	Subsite Name
0UL16	Balheary Bridge
0UL17	Seatown West
0UL18	**Prospect Point**
0UL19	**Seatown East**
0UL20	**Yellow Walls**
0UL21	Kilcrea East
0UL22	Mullan intake
0UL23	Corballis House Marsh
0UL24	Burrow Strand
0UL25	Malahide Point
0UL26	Malahide Strand South
0UL27	Malahide Strand North

0UL28	Malahide Martello Tower
0UL50	Kilcrea Field

Of these sub-sites the following 3 correspond to the area around the outflow of the potential hydrological connection between the Site of the Proposed Development and the SPA:

- 0UL18 Prospect Point
- 0UL19 Seatown East
- 0UL20 Yellow Walls

The I-WeBS survey site associated with this same area is OU 408 *Broadmeadow (Malahide) Estuary*, and the relevant sub-site within this site is OU 411 *Inner Malahide Estuary.*

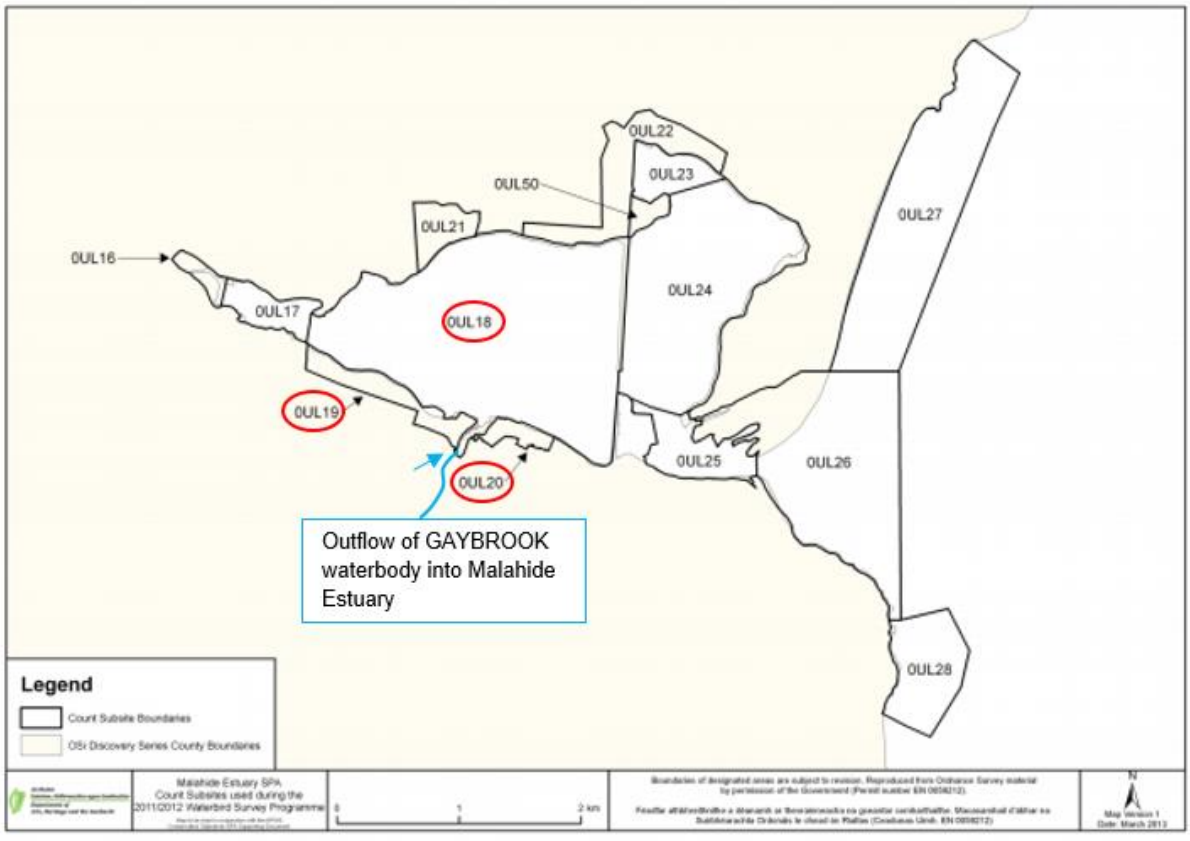

Figure 5. Sub-site map of Malahide Estuary Waterbird survey programme 2011/12 subsites showing GAYBROOK outflow and relevant sub-sites in red [adapted from NPWS (2013a)].

6.2.1 Great Crested Grebe

The peak number (whole site) of Great Crested Grebes was recorded during the January 2012 high tide survey (51 individuals); this count is close to the threshold of National importance (55). Great Crested Grebes were recorded within just three subsites (0UL18, 0UL27 and 0UL28), with 0UL18 (Prospect Point) the only subsite to record the species during low tide surveys recording a peak number of 29 (03/11/11). Great Crested Grebes foraged almost exclusively within this subsite during low tide surveys with the majority using 0UL27 (Malahide Strand North) during high tide surveys.

Although a potential impact to this QI species as a result of contaminated surface-water run-off containing suspended chemicals/fuels/sediment from the Proposed Development is considered highly unlikely, this potential impact cannot be ruled out in the absence of suitable mitigation measures.

6.2.2 Light-bellied Brent Goose

During the 2011/12 NPWS Waterbird Survey Programme, Brent Geese were recorded in ten subsites across the survey period. Numbers of Brent Geese peaked in November 2011 when a site count of 1,105 was recorded. Brent Geese were recorded regularly (three surveys or more) within five subsites including OUL18 Prospect Point, a sub-site covering the majority of the SAC west of the viaduct.

Brent Geese are grazers and are known for their preference for foraging in intertidal areas where Eelgrass *Zostera sp*. is present (Robinson et al. 2004), although once levels of this forage source decrease, inland grazing of managed grassland sites occur with extensive use of terrestrial lands around the SPA also documented (Roe & Lovatt, 2009).

Across the survey period Brent Geese were recorded foraging intertidally across a total four subsites: 0UL23 (Corballis House Marsh), 0UL24 (Burrow Strand), 0UL25 (Malahide Point) and 0UL26 (Malahide Strand South). 0UL24 (Burrow Strand) held peak numbers in all four low tide surveys with numbers ranging from 41% to 100% of the geese recorded on survey days. Two discrete areas of *Zostera noltii* occur in the north of this subsite and an examination of flock maps revealed that on some survey days all recorded Brent Geese were within these Zostera beds, while on other survey days the geese were distributed more widely across the subsite. The Brent were often associated with Mussel (*Mytilus edulis*) beds, likely foraging on seaweed species (e.g., *Ulva spp*.).

A potential impact to this QI species as a result of contaminated surface-water run-off containing suspended chemicals/fuels/sediment from the Proposed Development is considered highly unlikely, due to the preference of Brent geese to forage in the northern reaches of the SPA where the favoured Eelgrass *Zostera sp*. is present; as well as areas supporting the *Mytilus*-dominated community complex found to the east of the viaduct (see NPWS, 2013c).

Sub-sites 0UL19 (Seatown East) and 0UL20 (Yellow Walls) (both outside SPA boundary) did record foraging individuals during the high tide survey (peak number 142), however these geese were foraging on terrestrial lands abounding the SPA, and any potential impact associated with suspended contaminants outflowing into the SPA via the GAYBROOK waterbody, on terrestrial feeding grounds is considered unlikely.

No significant roosting sites were recorded within the three highlighted sub-sites.

Although a potential impact to this QI species as a result of contaminated surface-water run-off containing suspended chemicals/fuels/sediment from the Proposed Development is considered highly unlikely, this potential impact cannot be ruled out in the absence of suitable mitigation measures.

6.2.3 Shelduck

Shelduck were recorded foraging in three subsites overall (0UL17, 0UL23 and 0UL24) during the 2011/12 NPWS Waterbird Survey Programme; and roosted primarily in areas to the far west of the estuary (sub-site: OUL17) and to the east of the viaduct.

Although a potential impact to this QI species as a result of contaminated surface-water run-off containing suspended chemicals/fuels/sediment from the Proposed Development is considered highly unlikely, this potential impact cannot be ruled out in the absence of suitable mitigation measures.

6.2.4 Pintail

Pintail occurred at the estuary in small numbers during the 2011/12 NPWS Waterbird Survey and were recorded in sites to the north of the SPA and along the Malahide Island coast, east of the viaduct. I-WeBS (Online) data for the OU 408 *Broadmeadow (Malahide) Estuary* site shows a five season mean of 17 individuals, supporting this trend.

Although a potential impact to this QI species as a result of contaminated surface-water run-off containing suspended chemicals/fuels/sediment from the Proposed Development is considered highly unlikely, this potential impact cannot be ruled out in the absence of suitable mitigation measures.

6.2.5 Goldeneye

Goldeneye were located primarily within Sub-site OU18 Prospect point with a maximum site count of 58 recorded on 03/02/12.

Although a potential impact to this QI species as a result of contaminated surface-water run-off containing suspended chemicals/fuels/sediment from the Proposed Development is considered highly unlikely, this potential impact cannot be ruled out in the absence of suitable mitigation measures.

6.2.6 Red-breasted Merganser

Red-breasted Mergansers were recorded in three subsites overall 0UL17 (Seatown West), 0UL18 (Prospect Point) and 0UL24 (Burrow Strand). The two main subsites for the species however were 0UL18 and 0UL24 which both held peak numbers during two low tide surveys. 0UL18 also recorded peak numbers during the high tide survey.

Red-breasted Mergansers are sea ducks that feed on fish, obtained by frequent dives from the surface. This species was recorded foraging across the OUL18 sub-site; along shoreline and in shallow open waters, also roosting here.

Although a potential impact to this QI species as a result of contaminated surface-water run-off containing suspended chemicals/fuels/sediment from the Proposed Development is considered unlikely, this potential impact cannot be ruled out in the absence of suitable mitigation measures.

6.2.7 Oystercatcher

Oystercatchers are a relatively widespread species and occurred in 10 subsites overall including OUL18 and OUL19 during the 2011/12 NPWS Waterbird Survey. Oystercatchers are large wading birds that forage for shellfish primarily on tidal flats although the species

can be found foraging along non-estuarine coastline or terrestrially for earthworms as was recorded in sub-sites OUL19 and OUL20 (outside the SPA). Foraging distribution is confined largely to the outer estuary (east of the viaduct) although up to 52 individuals were recorded in the rather limited intertidal habitat of 0UL18 (Prospect Point).

The individuals recorded in sub-sites OUL19 and OUL20 were foraging on terrestrial lands abounding the SPA, and any potential impact associated with suspended contaminants outflowing into the SPA via the GAYBROOK waterbody, on terrestrial feeding grounds is considered unlikely.

Although a potential impact to this QI species as a result of contaminated surface-water run-off containing suspended chemicals/fuels/sediment from the Proposed Development is considered highly unlikely, this potential impact cannot be ruled out in the absence of suitable mitigation measures.

6.2.8 Golden Plover

Numbers of Golden Plover ranged from zero in October 2011 to a site peak of 1,900 in December 2011; the only count to exceed the national importance threshold. During winter, Golden Plovers feed primarily within agricultural grassland and arable land. Tidal flats are used as a roosting/resting habitat and the birds tend to favour large, open tidal flats. As a consequence, Golden Plovers tend to be in large aggregations when observed upon tidal flats.

A potential impact to this QI species as a result of contaminated surface-water run-off containing suspended chemicals/fuels/sediment from the Proposed Development is considered highly unlikely, due to the preference of this species for agricultural feeding grounds. This species does forage intertidally however, once these arable feeding grounds freeze over. This species also selected western sections of the estuary to roost, as well as sites to the east of the viaduct.

Although a potential impact to this QI species as a result of contaminated surface-water run-off containing suspended chemicals/fuels/sediment from the Proposed Development is considered highly unlikely, this potential impact cannot be ruled out in the absence of suitable mitigation measures.

6.2.9 Grey plover

Grey Plovers were recorded in a total of six subsites during the entire 2011/12 NPWS Waterbird Survey, including OUL18 Prospect Point. During winter Grey Plovers mainly forage intertidally taking a wide range of prey species. Only solitary individuals were recorded foraging in OUL18 with the majority utilising OUL24 Burrow Strand.

Although a potential impact to this QI species as a result of contaminated surface-water run-off containing suspended chemicals/fuels/sediment from the Proposed Development is considered highly unlikely, this potential impact cannot be ruled out in the absence of suitable mitigation measures.

6.2.10 Knot

Knot are specialist intertidal foragers preferring bivalve mussels. Relatively low numbers of this species were recorded during the 2011/12 NPWS Waterbird Survey with none recorded utilising the sub-sites around outflow of the GAYBROOK waterbody into the SPA.

Although a potential impact to this QI species as a result of contaminated surface-water run-off containing suspended chemicals/fuels/sediment from the Proposed Development is considered highly unlikely, this potential impact cannot be ruled out in the absence of suitable mitigation measures.

6.2.11 Dunlin

Between 60% and 100% of all foraging Dunlin recorded during the 2011/12 NPWS Waterbird Survey were recorded within 0UL24 (Burrow Strand). This species was not recorded foraging in any of the three relevant sub-sites surrounding the outflow of the GAYBROOK waterbody into the SPA, however 62 birds were observed roosting at the mouth of this waterbody during February roost surveys.

Although a potential impact to this QI species as a result of contaminated surface-water run-off containing suspended chemicals/fuels/sediment from the Proposed Development is considered unlikely, this potential impact cannot be ruled out in the absence of suitable mitigation measures.

6.2.12 Black - tailed Godwit

Black-tailed Godwits are relatively large, long-billed wading birds that forage within intertidal flats for their preferred prey of bivalves such as *Macoma balthica, Scrobicularia plana* and *Mya arenaria.* This species is relatively adaptable, utilising other habitats such as terrestrial grassland, coastal marshes or freshwater callows also. Numbers of Black-tailed Godwits of National importance were recorded during all surveys and ranged from 188 (06/12/11) to 404 (03/11/11) during low tide surveys, with 205 counted during the high tide survey. Black-tailed Godwits foraged in seven sites including OUL18, and terrestrially foraged in OUL19.

Although a potential impact to this QI species as a result of contaminated surface-water run-off containing suspended chemicals/fuels/sediment from the Proposed Development is considered highly unlikely, this potential impact cannot be ruled out in the absence of suitable mitigation measures.

6.2.13 Bar - tailed Godwit

Bar-tailed Godwits are a wader species considered characteristic of coastal wetland sites dominated by sand (Hill et al. 1993), preferring polychaete worms such as Lugworm *Arenicola marina* and *Nepthys sp.* Bar-tailed Godwits foraged in greatest numbers and regularity within 0UL24 (Burrow Strand) and 0UL26 (Malahide Strand South). Very low numbers were recorded irregularly within 0UL17 and 0UL18.

Although a potential impact to this QI species as a result of contaminated surface-water run-off containing suspended chemicals/fuels/sediment from the Proposed Development is considered highly unlikely, this potential impact cannot be ruled out in the absence of suitable mitigation measures.

6.2.14 Redshank

Redshank were widespread and recorded within 10 subsites overall including OUL18 and OUL19. Redshanks forage mainly by pecking at the surface or probing within intertidal mudflats favouring the muddier sections of sites and preying on worm species, molluscs & crustaceans (Dempsey & O'Clery, 2012).

Although a potential impact to this QI species as a result of contaminated surface-water run-off containing suspended chemicals/fuels/sediment from the Proposed Development is considered highly unlikely, this potential impact cannot be ruled out in the absence of suitable mitigation measures.

6.2.15 Wetlands and Waterbirds [A999]

The potential impacts to the wetland habitat component of the Malahide Estuary are covered in section 6.1, and the individual SCI species are discussed in section 6.2.

6.2.16 Results of Wintering Waterfowl/Shorebird Surveys

Impacts in terms of *ex-situ* usage were screened out at Appropriate Assessment Screening stage. The following is noted with regard *ex-situ* habitat and SCI species listed for nearby SPAs:

The results of Winter bird Surveys at the Site of the Proposed Development (6 survey days) comprised of a total of 36 hourly counts between October 2020 and March 2021. A further three visits were conducted between January and March 2022 (27/01/2022, 03/03/2022 & 23/03/2022) which confirmed conditions at the Site had not changed since the 2020/2021 winter.

Out of a total of 36 hourly counts: 100% recorded **no SCI waterfowl/shorebird species** utilising the Site of the Proposed Development. As would be expected no Light-bellied Brent Geese were recorded utilising the Site of the Proposed Development, nor were any Light-bellied Brent Goose droppings; a distinctive indicator of this species' presence/usage of a site, despite thorough site walkovers carried out each day of the winter surveys.

The Site does not provide any *ex-situ* breeding, roosting, staging or foraging habitats for any of the species listed as Species of Conservation Interest (SCI) for the European Sites in question. The majority of SCI species listed for the SPAs in question are coastal/marine species whose foraging/roosting habitat are confined to these coastal habitats (e.g., divers, ducks, wader species).

For species that are known to utilise farmland/arable fields as foraging habitats; such as Black-tailed Godwit, Greylag Goose, Golden Plover, Oystercatcher and Curlew; it is deemed that the Site of the Proposed Development does not represent suitable *ex-situ* feeding/roosting habitat. This is due in-part to the isolated nature of the Site as a singular arable stubble field, in dense urban surroundings. Considering the abundance of considerably more suitable agricultural lands that surround the Malahide and Rogerstown Estuaries (e.g., those described in Roe & Lovatt, 2009) and that are located within the intervening lands separating the Site of the Proposed Development from the other relevant SPAs within the 15km Zone of Influence (ZOI) i.e., North Bull Island SPA, Baldoyle Bay SPA, South Dublin & River Tolka Estuary SPA and Lambay Island SPA; the Site's urban

location and proximity to several busy roads and large residential areas renders it largely unsuitable for the above species.

It is therefore concluded that there will be no loss of any *ex-situ* foraging/roosting habitat, to any of the SCI species listed for the relevant SPAs; as a result of the Proposed Development.

6.3 Summary of Identified Potential Impacts

Table 7. Summary of identified potential impacts to qualifying interests (QIs) of relevant European Sites requiring mitigation

Qualifying Interest	Identification of Potential Impacts
The Malahide Estuary SAC	
- Mudflats and sandflats not covered by seawater at low tide [1140]	**Potential impacts as a result of:** - Contaminated surface-water run-off containing suspended chemicals/fuels/sediment from the Proposed Development entering the SAC via the Gaybrook stream which abounds the northern boundary of the Site of the Proposed Development during the Construction and Operation Phase. - Invasive species of flora transported via Gaybrook stream during Construction Phase.
- *Salicornia* and other annuals colonizing 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]	- Invasive species of flora transported via Gaybrook stream during Construction Phase.
- Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	
The Malahide Estuary SPA	
- [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*)	**Potential impacts as a result of:** - Contaminated surface-water run-off containing suspended chemicals/fuels/sediment from the Proposed Development entering the SPA via the Gaybrook stream which abounds the northern boundary of the Site of the Proposed Development during the Construction and Operation Phase.

- [A162] Redshank (*Tringa totanus*)	
- Wetlands & Waterbirds [A999]	**Potential impacts as a result of:** - Contaminated surface-water run-off containing suspended chemicals/fuels/sediment from the Proposed Development entering the SPA via the Gaybrook stream which abounds the northern boundary of the Site of the Proposed Development during the Construction and Operation Phase. - Invasive species of flora transported via Gaybrook stream during Construction Phase.

7 MITIGATION MEASURES

In the absence of suitable mitigation measures, potential impacts on QI habitats and species associated with the relevant European Sites, as a result of the Proposed Development, have been identified. These include potential impacts to habitats listed as QIs for The Malahide Estuary SAC and species listed as QIs for The Malahide Estuary (SPA); associated with potential contaminated surface water run-off from the Site of the Proposed Development during the Operational and Construction Phases; and invasive plant species potentially introduced and dispersed during the Construction Phase via the Gaybrook stream.

Suitable mitigation measures have been designed to minimise/negate any potential impact on these habitats and species; as a result of the Proposed Development, thus maintaining the integrity of their respective conservation objectives.

7.1 Construction Phase

A Construction Environmental Management Plan (CEMP) has been produced by Waterman-Moylan Engineering Consultants and will be implemented by the contractor during the Construction Phase of the Proposed Development. The CEMP details the suitable precautions to be followed to ensure the prevention of any potential pollution of watercourses as a result of construction activities, and will include the following:

7.1.1 General Surface water mitigation measures

- The contractor will appoint a suitably qualified person to act as Ecological Clerk of Works (ECoW) to oversee the implementation of measures for the prevention of pollution to the receiving surface water environment.

- Measures such as silt fencing, straw bales and trenches will be inspected regularly by the ECoW to ensure they are effective and in good repair. Should any measures be damaged or ineffective, they will be repaired or replaced as per the instruction of the ECoW.

- Temporary cut off trenches will be excavated along the north of the Site in advance of stripping topsoil; to intercept sediment laden surface water flows prior to their reaching the Gaybrook Stream.

- These cut off trenches will be connected to a temporary settlement pond. Straw bales will be placed within the cut off trenches at strategic locations and at the outfall from the settlement pond.

- Stilling ponds to be installed where necessary with a diffuse outflow to mitigate any increase in run-off, along with any other erosion control and retention facilities (e.g. a three stage treatment train: swale – stilling pond – diffuse outflow); to reduce risk of downstream flooding.

- Location of stilling ponds will take into account groundwater vulnerability at the site and will be located in suitable areas.

- As detailed in the CEMP, regular testing of surface water discharges will be undertaken at the outfall from the subject lands. The location will be agreed between the project ecologist and the site foreman at the commencement of works. Trigger levels for halting works and re-examining protection measures will be: pH >9.0 or pH <6.0; and/or suspended solids >25 mg/l. These trigger levels are based on those outlined within 'Guidelines on Protection of Fisheries During Works in and Adjacent to Waters (IFI, 2016)'.
- Where silt control measures are noted to be failing or not working adequately, works will cease in the relevant area. The project ecologist/ ECoW will review and agree alternative pollution control measures, such as deepening or redirecting trenches as appropriate, before works may recommence.
- Any imported materials will, as much as possible, be placed on site in their proposed location and double handling will be avoided. Where this is not possible designated temporary material storage areas will be used.
- These temporary storage areas will be located at least 10m away from any surface water features/drainage ditches etc.; and will be surrounded with silt fencing to filter out any suspended solids from surface water arising from these materials.
- Pouring of cementitious materials will be carried out in the dry. A designated wash down area within the Contractor's compound will be used for cleaning of any equipment or plant, with the safe containment and disposal of any cementitious water. No such waters will be allowed to reach the drainage ditches and streams at the Site.
- Where possible the permanent connection to the public foul sewer will be used temporarily for construction vehicle wash down. Such waters will discharge directly, via suitable pollution control and attenuation, to the foul sewer system.
- Refuelling of plant during Construction Phase will only be carried out at designated refuelling station locations on site. Each station will be fully equipped for spill response and a specially trained and dedicated Environmental and Emergency Spill Response team will be appointed before the commencement of works on site.
- Only emergency breakdown maintenance will be carried out on site. Drip trays and spill kits will be available on site to ensure that any spills from the vehicle are contained and removed off site.
- All personnel working on site will be trained in pollution incident control response. Emergency silt control & spillage response procedures contained within the CEMP will ensure that appropriate information will be available on site outlining the spillage response procedures and a contingency plan to contain silt during an incident.
- Any other diesel, fuel or hydraulic oils stored on site will be stored in bunded storage tanks- the bunded area will have a volume of at least 110% of the volume of the stored materials as per best practise guidelines (Enterprise Ireland, BPGCS005).

- Adequate security will be provided during the Construction Phase to prevent any incidents as a result of vandalism.
- Portaloos and/or containerised toilets and welfare units will be used to provide facilities for site personnel. All associated waste will be removed from site by a licenced waste disposal contractor.

7.1.1.1 Stream Re-profiling Works

- A suitably qualified ECoW will be present during the stream reprofiling works to ensure measures to minimise sedimentation of the Gaybrook Stream are followed.
- Re-profiling to take part in dry weather as far as is possible, using suitable materials, to minimise any disturbances to any waters that may flow through this ditch.
- A 10m buffer zone will be enforced around the stretch of the waterway located along the northern boundary of the Site of the Proposed Development; wherein no works will take place other than those associated with the re-profiling of the stream itself.
- No heavy plant machinery will be allowed enter this buffer zone, nor will materials be stored in this area.
- Operation of machinery in-stream will be kept to a minimum, and all machinery must be mechanically sound to avoid oil/fuel leakage to stream waters.
- Oil/fuel storage and refilling area will be located at least 10m from the stream and minimum 50m from any boreholes/wells, in an area surrounded by a raised bund as per best practise guidelines (Enterprise Ireland, BPGCS005).
- Any flows present in the existing stream during re-profiling works to be diverted via overland temporary pipes around areas where active works are taking place.
- Stream re-profiling to be carried out in small stages starting upstream and working downstream.
- The re-profiled stream channel bed will be constructed using suitable stone material to protected imported material from erosion.
- Erosion control matting (e.g., Jute matting) and other measures will be used to protect banks from erosion while planted vegetation establishes.

7.1.1.2 Invasive flora species management

Two invasive flora species were recorded in proximity to the Gaybrook Stream; along the Sites northern boundary: Butterfly-bush (*Buddleja davidii*) and Himalayan Honeysuckle (*Leycesteria formosa*). Neither of these plant species are considered High Impact invasives species nor are they listed on the Third Schedule of the *European Communities (Birds and Natural Habitats) Regulations* 2011 (SI 477 of 2011, as amended). Nevertheless, the spread of these species should be avoided to ensure no potential for downstream impacts. Particular attention will be paid to the prevention of any possibility of fragments of said plant entering the Gaybrook Stream waterway that runs along the Site's northern boundary, thus ensuring no transportation of the plant species occur; and no potential nuisances in the Malahide Estuary SAC and SPA further downstream.

The following approaches to these species will be implemented:

7.1.1.2.1 Butterfly bush – Buddleja davidii

As Buddleia is a plant that favours disturbed sites, physical removal of plants can provide ideal conditions for the germination of seeds that are present in the soil. For this reason, care needs to be taken to ensure that revegetation of treated areas is undertaken swiftly. The branches of Buddleia are capable of rooting as cuttings, so care should also be taken to ensure material is disposed of in a manner to avoid this risk.

Figure 6. Butterfly bush (Credit: TII, 2020)

Chemical control

Foliar application of herbicide is capable of providing control with young plants and small infestations but should be followed up at six-monthly intervals as regrowth is common.

Physical control

Removal of the flower heads before seed set (June or even July) is an important control method as it reduces the volume of seeds that are available to spread. Hand-picking of young plants will provide control, but it is very tedious and should be undertaken with care to avoid soil disturbance, which can give rise to a flush of new seedling.

Digging out plants is only practical with relatively minor infestations, at the initial stage of invasion, or where a site is to be excavated for development or road construction purposes. Mowing of young plants does not provide effective control as they re-sprout with vigour. The physical removal of mature stands is not recommended for the same reason. After uprooting, it is essential to plant the ground in order to prevent a flush of new seedling growth. When Buddleia plants are cut, regrowth from the stump can be very vigorous.

Combined chemical and physical control

Effective control can be achieved by cutting Buddleia plants to a basal stump during active growth (late spring to early summer) and immediately treating the total cut surface with herbicide concentrate. Monitoring will be required and retreatment, as necessary. Do not leave cut stems and branches on the ground as they will re-root and produce new plants.

Summary approach

- Stands of Buddleia identified in below figure should be cut to a low stump in late spring to early summer and painted with herbicide by a licensed Invasive Alien Plant specialist.
- Any cut branches/stems should be wrapped in material and kept off the ground prior to disposal at a licensed waste facility to prevent spread.
- Periodic rechecks of the stands as per the advice of an IAP specialist should be conducted with any leaves re-painted with herbicide by the licensed specialist.
    - Stumps and roots can then be removed based on the IAP specialist's guidance.

7.1.1.2.2 Himalayan Honeysuckle – *Leycesteria formosa*

Himalayan honeysuckle spreads via seeds being dispersed by birds and watercourses. It can be eliminated by digging up all visible roots, by cutting stems and applying herbicide or by a combination of both approaches. This process should be repeated yearly thereafter until there are no more plants left above ground level.

Stumps resprout so frequent follow-up is required to ensure eradication. Replant sites where native species are slow to recover to prevent reseeding.

A licensed IAP specialist should be consulted with regards herbicide selection and application.

Summary approach

- Dig out the stands (including roots) identified in Figure 7 (this can be carried out all year round).
- Re-check area periodically for regrowth and manually pull stems or apply focused herbicide application to leaves.

Note: Spot spraying should be used with appropriate equipment to avoid damaging nearby vegetation.

Figure 7. Himalayan Honeysuckle (credit: Caroline Lewis/Weedbusters.org.nz)

Figure 8. Invasive species recorded at the site during Enviroguide surveys on 27/09/2021 & 23/03/2022. Pink marker = Himalayan Honeysuckle, Blue = Butterfly bush.

7.1.2 Operational Phase

The *Engineering Assessment Report* (EAR) completed by Waterman-Moylan Engineering Consultants details the comprehensive Sustainable Urban Drainage System (SuDS) that is to be incorporated into the Proposed Development. These measures will ensure that all surface waters leaving the Site of the Proposed Development during its Operational Phase will be of an acceptable quality and will cause no nuisances to ecological sensitivities located downstream.

These measures will include the following:

- Green/Blue roofing on roofs of proposed apartment blacks and at podium level to provide attenuation and treatment;
- Water Butts/ Rainwater harvesting included in apartment design for sustainable re-use of rainwater;
- Permeable multi-use playing surfaces incorporated into amenity playing pitch design to provide additional attenuation prior to discharge to the stream;
- Filter drains in place along areas of road/footpath for initial surface water run-off treatment from these areas;

- Detention basins with hydrobrakes proposed for three locations, to store and treat surface water prior to controlled outflow to Gaybrook stream at rates sufficient to ensure no increase in surface water flow rates downstream; and
- Petrol interceptors to be installed in basement parking area prior to discharge to foul sewer; and upstream of discharge to porous amenity playing pitch attenuation area.

A stormwater management or treatment train approach has been proposed which assures that run-off quantity and quality is improved, and that surface water generated at different locations on-site undergo various stages of treatment/management prior to final outflow:

- Run-off within the curtilage of the property boundary shall pass through at least one SUDS component prior to discharging to downstream SUDS components within the public realm.
- Run-off from public areas (such as roads, parking bays, hard and soft landscaped areas and footpaths) shall pass through at least two SUDS components prior to discharging to the final downstream detention/retention/polishing SUDS components within the public realm.
- The final SUDS Components located in the public realm shall comprise a detention basin prior to discharge to the Gaybrook Stream. The location of the proposed detention basin is outside the high-end future scenario fluvial flood extents.
- Storage for the 100-year event (as a minimum) including a 20% increase in rainfall intensity for climate change shall be provided for run-off from the public realm, with a maximum discharge rate of 2l/s/ha.

8 POTENTIAL CUMULATIVE IMPACTS

A search of planning applications located within the vicinity of the Site of the Proposed Development was conducted using online planning resources such as the National Planning Application Database (NPAD) (MyPlan.ie). Any planning applications listed as granted or decision pending from within the last five years were assessed for their potential to act in-combination with the Proposed Development and cause likely significant effects on the relevant European Sites. Long-term developments granted outside of this time period were also considered where applicable.

- Ref: ABP 308366-20; MKN Property Group; Fosterstown North and Cremona, Forest Road, Swords, Co. Dublin; Grant Perm. w Conditions: 03/02/2021.

  Description: *278 no. residential units (apartments) no. houses, 216 no. apartments, 52 no. duplexes), childcare facility, retail unit and associated site works.* Distance from Proposed Development: *ca*.100m

- Ref: F16A/0324; LIDL Ireland GmbH; Dublin Road, Swords, Co. Dublin; Granted: 18/10/2016 by Fingal County Council.

  Description: *Amendments to ABP Ref. PL06F.244562 (and Fingal County Council Ref. F14A/0492) (1) retention permission of works to create and completion of an ESB substation building at the southern boundary of the site which also results in the loss of two parking spaces immediately north of the sub-station; (2) Planning permission for amendments to the permitted development to include: (a) south west elevation - additional glazing and finishes; (b) north west elevation - change to finishes and new car park entrance portico with safety signage; (c) south east elevation - additional windows and doors and change of finish materials (d) north east elevation - change of finish materials and inclusion of concrete wall. Adjustments to lift core extends above the level roof at the rear of the store. Reconfiguration of space within the premises offices and storage areas. Replacement of the permitted concrete acoustic wall to the west of the food-store to a timber acoustic fence. All other site development works and any other associated ancillary works*. Distance from Proposed Development: *ca*.10m.

- Ref: F19A/0103; Board of Management of Colaiste Choilm; Colaiste Choilm CBS, Dublin Road, Swords, Co. Dublin; Granted: 29/05/2019 by Fingal County Council. Description: *Alterations to existing school building including removal of the existing roofs, raising walls as necessary and construction of a new roof and associated site works*. Distance from Proposed Development: ca.95m.

- Ref: F08A/1057/E1; Chartered Land Ltd; Pavilions Shopping Centre, Malahide Road And, No's 9, 10 & 11 Dublin Road, Swords, Co Dublin; Granted: 14/01/2016 by Fingal County Council.

  Description: *A 7-year permission for development at this site. The Proposed Development comprises the construction of Pavilions Phase 3, a mixed-use town centre development amounting to c.272,637 sq.m. total Gross Floor Area (GFA) and accommodated in buildings ranging in height from 3 to 10 storeys over three levels of enclosed basement car parking, with an associated network of open, sheltered and enclosed streets and spaces.* (Full description at

http://planning.fingalcoco.ie/swiftlg/apas/run/WPHAPPDETAIL.DisplayURL?theApnID=F08A/1057/E1). Distance from Proposed Development: *ca.*335m.

- Ref: F18A/0198; MSD International GmbH; Drynam Road, Barrysparks, Commons East, Crowcastle, Swords, Co. Dublin. Granted: 17/07/2018 by Fingal County Council.

  Description: *Development at an existing pharmaceutical manufacturing facility (approximately 13.4 hectares). The development consists of the construction of a biopharmaceutical manufacturing campus with a total additional floor area of 12,046 square metres and specifically provides for:- (a) the conversion of an existing warehouse building to a biopharmaceutical manufacturing processes building which will require internal alterations, extension and modifications to the existing elevations; (b) the conversion of an existing manufacturing building to a central utilities and laboratory building requiring internal alterations, extension and modifications to the elevations including the addition of 3 no. flue stacks (to a maximum height of 18.68 metres); (c) construction of a two-storey quality control laboratory and single-storey with mezzanine warehouse building; (d) extension of the existing central spine corridor to provide connectivity to the new laboratory and warehouse buildings, including provision of new staff entrance; (e) demolition of existing utilities plant and buildings comprising 2 no. boiler rooms, compressor room, electrical room, generator compound, water tank and pump house, and 2 no. store buildings; (f) provision of new logistics yard and new ancillary external utilities yard comprising 2 no. electrical switch room buildings, water pump and treatment building, bunded water tank, bunded gas and diesel storage tanks, 3 no. emergency generators and waste water management facility; (g) installation of mechanical plant to the roof of the existing administration, laboratory and canteen building (h) all ancillary site works including diversion and partially reopening of the existing culverted stream within the site; underground services; surface water attenuation tank; modifications to the internal road network, modifications to existing car parking including removal of 212 spaces; 2 no. new bicycle shelters; lighting; CCTV; soft and hard landscaping. An Environmental Impact assessment Report (EIAR, formerly known as and EIS) and Natura Impact Statement (NIS) have been prepared and will be submitted to the Planning Authority with the application. The EIAR and NIS will be available for inspection or purchase at a fee not exceeding the reasonable cost of making a copy during office hours at the offices of the Planning Authority. The Proposed Development is for the purposes of an activity requiring an application to the Environmental Protection Agency for a licence under the Industrial Emissions Directive.* Distance from Proposed Development: *ca.*1.1km

- Ref: F18A/0376; Tesco Ireland Ltd; Tesco Holywell Centre, Junction of the R125 and the Holywell Link Road, Swords, Co. Dublin; Granted: 02/10/2018 by Fingal County Council.

  Description: *The development will consist of an extension (458 sq.m gross) to the existing local community and commercial facilities to include a café unit of 173 sq.m. gross and 2 no. retail/retail service units (100 sq.m & 102 sq.m. gross) at ground floor level, a management suite and staff facilities (58 sq.m. gross) at first floor level, circulation areas and screened roof mounted plant provided in a new block to the west of the existing local facilities. Planning permission is also required for all ancillary site services, landscaping and site development works.* Distance from Proposed Development: *ca.*900m.

- Ref: F18A/0426; Tesco Ireland Ltd; Tesco Holywell Centre, Junction of the R125 and the Holywell Link Road, Swords, Co. Dublin; Granted: 06/03/2019 by Fingal County Council.

  Description: *The provision of an extension of 750 sq.m. gross floor area (500 sq.m. net) to the existing licenced Tesco food store. The development also includes the provision of additional ancillary car parking to the north of the existing car park as well as all site services, landscaping and site development works. Add Info received 21st December 2018.* Distance from Proposed Development: *ca.*900m.

- Ref: F17A/0392; October Management Ltd; Holywell, Marshallstown, Swords, Co Dublin; Granted: 01/02/2018 by Fingal County Council.

  Description: Permission *for a proposed roundabout and access road to serve proposed commercial development lands including associated services. Add Info rec'd 27th November 2017.* Distance from Proposed Development: *ca.*1km.

- Ref: F18A/0601; Department of Education and Skills; Lands adjacent to Feltrim Road, Drinan, Swords, Co Dublin; Granted: 23/01/2019 by Fingal County Council.

  Description: *Permission for the construction of a new three storey post primary school building (Malahide-Portmarnock ET (RN68308L)), associated car parking, access road, construction of external ball courts, landscaping, connection to public services and all associated site works.* Distance from Proposed Development: *ca.* 1.7km.

No developments with the potential to result in likely significant in-combination effects to any European Site were identified. The majority of applications in the vicinity of the Site are for domestic extensions and revisions to existing private dwellings. The Proposed Development will not contribute to any cumulative impacts involving other developments in the area. Any combined impacts relating to construction phase overlap of the adjacent development to the north (Ref: ABP 308366-20), should it occur, (e.g., noise, dust etc.) would be short-term and localised in nature and would not have the potential to affect any European Sites due to the intervening distances involved.

8.1 Relevant Plans and Policies

In addition, the following Policies and Plans were reviewed and considered for possible in-combination effects with the Proposed Development.

- Fingal Development Plan 2017 - 2023
- Fingal Heritage Plan 2018 - 2023
- Dublin City Biodiversity Action Plan 2015 - 2020

It is noted that there is potential for proposed plans and projects within the Fingal Development Plan 2017 - 2023 land area, to have cumulative, negative impacts on conditions in Dublin Bay and other coastal areas, via rivers, other surface water features, and foul waters treated at wastewater treatment facilities. However, the core strategy, policies and objectives of the Fingal Development Plan have been developed to anticipate and avoid the need for developments that would be likely to significantly affect the integrity of any European Site. Furthermore, such developments are required to conform to the relevant regulatory provisions for the prevention of pollution, nuisance or other environmental effects likely to significantly affect the integrity of European Sites.

8.2 Increased Loading on Swords WwTP

The potential for foul waters generated at the Site of the Proposed Development to reach the above European Sites and cause significant effects during the Operational Phase was screened out at the Appropriate Assessment Screening stage due to the following:

- The Swords WwTP was identified by the EPA as being compliant with the Emission Limit Values (ELVs) as set out in its Wastewater Discharge Licence, according to the 2020 Annual Environmental Report (AER) prepared by Irish Water for this facility (Irish Water, 2021).
- The WwTP was upgraded in 2016, increasing its capacity from 60,000 PE to 90,000 PE (Murphygroup.com). According to the 2020 AER (Irish Water, 2021), the facility has surplus organic capacity of 11,391 PE remaining and will not be exceeded within the next three years.

As such, it is not envisaged that the Proposed Development has the potential to act in combination with other developments and lead to overloading at Swords WwTP based on its current treatment capacity.

Therefore, upon examination of the above listed plans and projects within the general vicinity of the Proposed Development it is concluded that there is **no possibility for any significant cumulative effects** on European Sites involving the Proposed Development.

9 CONCLUSION

This Natura Impact Statement details the findings of the Stage 2 Appropriate Assessment conducted to further examine the potential direct and indirect impacts of the Proposed Development planning application on lands at Fosterstown North, Dublin Road / R132, Swords, Co. Dublin on the following European Sites:

- Malahide Estuary SAC [000205]
- Malahide Estuary SPA [004025]

The above sites were identified by a screening exercise that assessed likely significant effects of a range of effects that may arise from the proposed development. The Appropriate Assessment investigated the potential direct and indirect impacts of the proposed works, both during construction and operation on the integrity and qualifying interests of the above European Sites, alone and in combination with other plans and projects, taking into account the site's structure, function and conservation objectives.

Where potentially significant adverse impacts were identified, a range of mitigation and avoidance measures have been recommended to offset them. As a result of this Appropriate Assessment, it has been concluded that, with the implementation of the mitigation measures detailed in this report, the Proposed Development at lands at Fosterstown North, Dublin Road / R132, Swords, Co. Dublin, will not adversely affect the integrity of the above European Sites (or any other).

10 REFERENCES

ABP Marine Environmental Research Ltd. (2013). Tools for Appropriate Assessment of Fishing and Aquaculture Activities in Marine and Coastal Natura 2000 Sites. Report II: Intertidal and Subtidal Sands. Marine Institute.

Aqua-Fact International Services Ltd. (2006). A Survey of Intertidal Mudflats and Sandflats in Ireland. On behalf of the National Parks and Wildlife Service Dublin, Ireland.

Chivers, L., Lundy, M., Colhoun, K., Newton, S., Houghton, J. & Reid, N. (2012). Foraging trip time-activity budgets and reproductive success in the black-legged kittiwake. Mar Ecol Prog Ser 456: 269–277.

Crowe, O. & Holt, C. (2013). Estimates of waterbird numbers wintering in Ireland, 2006/07–2010/11. Irish Birds 9, 545-552.

DEHLG. (2010). Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities. Department of Environment, Heritage and Local Government.

Dempsey, E., & O' Clery, M. (2012). The Pocket Guide to the Common Birds of Ireland. Gill Books. Dublin.

DHPLG. (2018). River Basin Management Plan for Ireland 2018-2021. Department of Housing, Planning and Local Government.

Enterprise Ireland. Best Practice Guide (BPGCS005) Oil storage guidelines. [ONLINE] Available at: https://www.leanbusinessireland.ie/includes/documents/OilStorageBPG.pdf

Environmental Protection Agency. (2002). Guidelines on information to be contained in Environmental Impact Statements. Environmental Protection Agency, Ireland.

Environmental Protection Agency. (2017). Guidelines on information to be contained in Environmental Impact Assessment Reports (Draft). Environmental Protection Agency, Ireland.

Environmental Protection Agency. (2022). EPA online map application [ONLINE] Available at https://gis.epa.ie/EPAMaps/ [Accessed: March 2022].

European Commission. (2000) Communication from the Commission on the precautionary principle.

European Commission. (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 Communities, Luxembourg.

European Commission. (2019). Managing Natura 2000 Sites: The Provisions of Article 6 of the Habitat's Directive 92/43/EEC. European Communities, Luxembourg.

European Commission. (2021). Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC Brussels, 28.9.2021 C. European Communities, Luxembourg.

Fossitt, J. A. (2000). A Guide to Habitats in Ireland. Kilkenny: The Heritage Council.

Franklin, A. N. (2002). What is Habitat Fragmentation? Studies in Avian Biology, 20-29.

GSI. (2003). Dublin GWB: Summary of Initial Characterisation. Geological Survey Ireland, Department of Communications, Climate Action and Environment.

GSI. (2022). Geological Survey Ireland Spatial Resources. [ONLINE]. Available at: https://dcenr.maps.arcgis.com/apps/MapSeries/index.html?appid=a30af518e87a4c0ab2fbde2aaac3c228 [Accessed: March 2022].

Hill, D., Rushton, S. P., Clark, N., Green, P & Prys-Jones, R. (1993). Shorebird communities on British estuaries: factors affecting community composition. Journal of Applied Ecology 30, 220-234.

Irish Water. (2020). Swords WwTP D0024-01 Annual Environmental Report. ONLINE. Available at: https://www.water.ie/__uuid/e2a591b2-5070-402c-b040-5330ab3b9c74/d0024-01_2020_aer-1.pdf

Lewis, L. J. & Tierney, T. D. (2014) Low tide waterbird surveys: survey methods and guidance notes. Irish Wildlife Manuals, No. 80. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Ireland.

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.

McCorry, M. & Ryle, T. (2009) Saltmarsh Monitoring Project 2007-2008. Volume 2. A Report for Research Branch, National Parks and Wildlife Service. Unpublished Report.

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.

NPWS (2013a), Conservation Objectives: Malahide Estuary Special Protection Area (Site Code 4025) - Supporting Document. Version 1. Department of Arts, Heritage and the Gaeltacht.

NPWS (2013b). Conservation Objectives: Malahide Estuary SPA 004025. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2013c). Conservation Objectives: Malahide Estuary SAC 000205. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2013d). Site Synopsis: Malahide Estuary SPA. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2013e). The Status of EU Protected Habitats and Species in Ireland. Habitats Assessments Volume 2, Version 1.0. Unpublished Report, National Parks & Wildlife Services. Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.

NPWS (2013f). The Status of EU Protected Habitats and Species in Ireland. Species Assessments Volume 3, Version 1.0. Unpublished Report, National Parks & Wildlife Services. Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.

NPWS (2017). Malahide Estuary SAC- Natura 2000 Standard Data Form. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2018). Generic Conservation Objectives. Version 6.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

Robinson, J. A., Colhoun, K., Gudmundsson, K. A., Boertman, D., Merne, O. J., O"Briain, M., Portig, A. A., Mackey, K. & Boyd, H. (2004). Light-bellied Brent Goose *Branta bernicla hrota* (East Canadian High Arctic population) in Canada, Ireland, Iceland, France, Greenland, Scotland, Wales, England, the Channel Islands and Spain. 1960/61 – 1999/2000. Waterbird Review Series. The Wildfowl & Wetlands Trust/Joint Nature Conservation Committee. Slimbridge. UK.

Roe J. & Lovatt, J. (2009) Wintering bird survey of the lands surrounding the Broadmeadows/Swords Estuary January – March 2009. Report for Fingal County Council. Draft 2. May 2009.

Ryle, T.; Murray, A.; Connolly, C.; Swann, M. (2009) Coastal Monitoring Project 2004-2006. A Report to the National Parks and Wildlife Service, Dublin. 2009. Unpublished Report.

Smith, G.F., O'Donoghue, P, O'Hora K., and Delaney, E. (2010). Best Practice Guidance for Habitat Survey and Mapping. Published by the Heritage Council.

Stewart, D., Middlemas, S., Gardiner, W., Mackay, S., & Armstrong, J. (2005). Diet and prey selection of cormorants (*Phalacrocorax carbo*) at Loch Leven, a major stocked trout fishery. Journal of Zoology, 267(2), 191-201.

Wetlands International. (2012) Waterbird population estimates - Fifth Edition. Wetlands International. Wageningen, The Netherlands.