Lucan Demesne Parking, Leixlip Road, Lucan, Co. Dublin

Ecological Impact Assessment (Draft)

June 21

2021s0208

South Dublin County Council

JBA Project Manager

Patricia Byrne
Block 660 Unit 8
The Plaza
Greenogue Business Park
Rathcoole, Dublin

Revision History

Revision Ref / Date Issued	Amendments	Issued to
S3-P01 / 02-04-2021	Draft Report	South Dublin County Council
S3-P02 / 21-06-2021	Draft Report (following additional surveys)	South Dublin County Council

Contract

This report describes work commissioned by Jed McDermott, on behalf of South Dublin County Council, by an email dated 08/02/2021. William Mulville of JBA Consulting carried out this work.

Prepared by ..... William Mulville BSc (Hons), MSc, ACIEEM
Ecologist

Reviewed by ..... Patricia Byrne BSc (Hons), PhD, MCIEEM
Senior Ecologist

Purpose

This document has been prepared as a Draft Report for South Dublin County Council. JBA Consulting accepts no responsibility or liability for any use that is made of this document other than by the Client for the purposes for which it was originally commissioned and prepared.

JBA Consulting has no liability regarding the use of this report except to South Dublin County Council.

Copyright

Carbon Footprint

A printed copy of the main text in this document will result in a carbon footprint of 239g if 100% post-consumer recycled paper is used and 304g if primary-source paper is used. These figures assume the report is printed in black and white on A4 paper and in duplex.

JBA is aiming to reduce its per capita carbon emissions.

Contents

List of Figures

List of Tables

Abbreviations

AA	Appropriate Assessment
DoEHLG	Department of Environment, Heritage and Local Government
CIEEM	Chartered Institute of Ecology and Environmental Management
EC	European Communities
EcIA	Ecological Impact Assessment
EPA	Environmental Protection Agency
EU	European Union
GIS	Geographical Information Systems
NBDC	National Biodiversity Data Centre
NPWS	National Parks and Wildlife Service
pNHA	Proposed Natural Heritage Area
QI	Qualifying Interest
RBMP	River Basin Management Plan
SAC	Special Area of Conservation
SPA	Special Protection Area
WFD	Water Framework Directive
WWTP	Waste Water Treatment Plant
ZoI	Zone of Influence

1 Introduction

JBA Consulting Ireland Ltd. has been commissioned by South Dublin County Council to undertake an Ecological Impact Assessment (EcIA) in relation to a proposed parking development at Leixlip Road, Lucan, Co. Dublin.

1.1 Aims

The aims of this EcIA are to:

- Establish baseline ecological conditions to enable identification of potentially important ecological features within the zone of influence of the project
- Determine the ecological value of identified ecological features
- Assess the significance of impacts of the proposed project on ecological features of value
- Identify avoidance, mitigation or compensatory measures
- Identify residual impacts after mitigation and the significance of their effects
- Identify opportunities for ecological enhancement

1.2 Site location

The proposed parking development will be located in two sections along the Leixlip Road (R835), west and east of the Lucan Bypass (N4) (Figure 1-1). The River Liffey is located approximately 75m and 110m north of the western (A) and eastern (B) site sections, respectively. Additionally, the Lucan Stream is located 15m south of the western site section, before entering a short-culverted section and then flowing into the River Liffey.

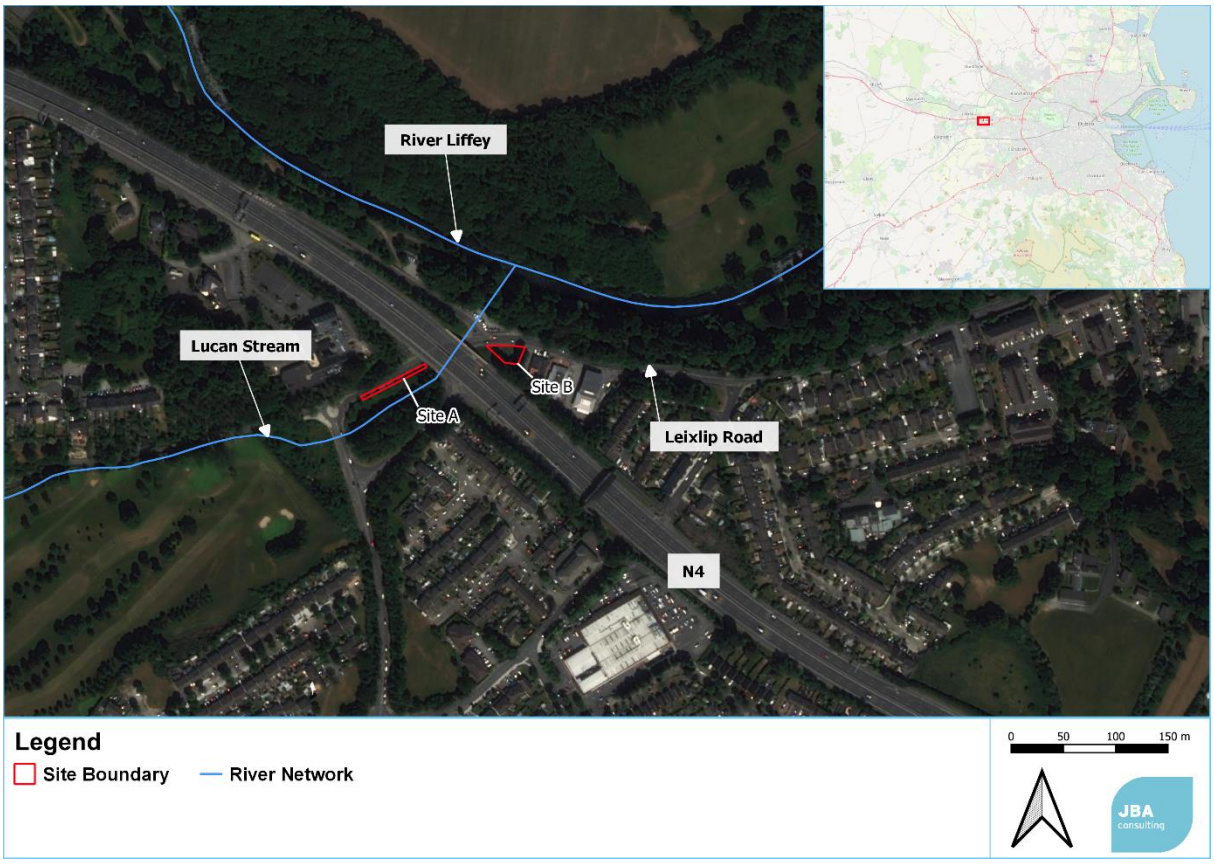


Figure 1-1: Site location and local watercourses (ESRI, 2021; OSM 2021)

2 Project Description

2.1 The 'Project'

This project involves the development of additional parking facilities to replace existing facilities at the Lucan Demesne entrance. Existing parking facilities at Lucan Demesne are to be removed to allow for the provision of a more welcoming entrance to Lucan Demesne to preserve and provide for open space and recreational activities. It is proposed to re-locate parking to 2 no. new sites in close vicinity to Lucan Demesne. Both sites are to be designed with the use of SUDs to provide both drainage and public amenity as a priority.

Site A is proposed to provide on-street parking on the westbound lane of the R835, to the west of the N4 overbridge. Site A is proposed to include for 7 no. on-street parking spaces. Drawing attached.

Site B is proposed to provide off-street parking by means of a small car-park. Site B is located off the westbound lane of the R835 directly to the east of the N4 overbridge. Site B is proposed to provide 7 no. car parking spaces, including 2 no. Wheelchair Accessible spaces.

See Appendix A and B for the site layout plans for both sites.

2.1.1 Site Drainage

The detailed drainage design options for the project are outlined below:

- The drainage design will encompass the specification and design of drainage systems based on site/soil investigation and testing in accordance with BRE Digest 365. The first preference for the drainage system is permeable pavement with a soakaway and overflow to existing network. If this is deemed unfeasible, the drainage design will incorporate an attenuation system, with petrol interception and connection to the existing drainage network.
- Testing and investigation in conjunction with permeable pavement manufacturers recommendations will determine overall formation level. It is envisaged that a type A; no infiltration or a type B, partial infiltration system will be specified for this pavement at detailed design stage due to desk study investigation of soil type.
- Any soakaway design (if deemed suitable) will be designed in accordance with CIRIA 735 SUDS manual.
- Design requirements which will be met for any potential soakaway below:
  - At least 5m from any building, public sewer, road boundary or structure.
  - Not in such a position that the ground below foundations is likely to be adversely affected.
  - 10m from any sewage treatment percolation area and from any watercourse / floodplain.
  - Soakaways to include an overflow connection to a public surface water sewer where possible.
- Any attenuation will be designed such that no additional flows requirements will be placed on the existing network. An Arch system, rather than geocellular, will be used to attenuate flows if required.

2.1.2 Construction Schedule

The duration of the proposed development's construction phase is approximately 2-4 months.

2.1.3 Excavation requirements

Construction phase excavations for attenuation systems /soakaways will not exceed 4m in depth.

3 Methodology

3.1 The EcIA Team

This EcIA was completed by JBA Ecologists William Mulville and the report has been reviewed by JBA Senior Ecologist Patricia Byrne.

These staff members thus fulfil the Environmental Impact Assessment (EIA) Directive personnel requirements of 'competent persons'.

3.2 Policy and Legislation

Policy and legalisation for nature conservation, protected and priority species relevant to the proposed project is provided in Appendix A.

3.3 Methods

This EcIA assesses the ecological features present within the site and its surrounding area (the Zone of Influence; ZoI) in relation to the proposed works. This allows for identification of the potential impacts of the proposed works upon the ecological features of the site at an early stage, whilst identifying the potential ecological constraints upon the proposed works. The assessment is based on a desk-based assessment, which determines the baseline conditions at the site of the proposed works, and site surveys, which provided information on habitats and species present on the site and its surroundings.

This EcIA will outline the findings of the desk-based assessment and the surveys and identifies any potential impacts of the proposed works on ecological features within the ZoI of the site, and proposes mitigation measures to avoid or reduce impacts where necessary.

3.4 Guidance

This assessment was conducted in accordance with the following guidance documents:

- Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland: Terrestrial, Freshwater, Coastal and Marine. Chartered Institute of Ecology and Environmental Management, (CIEEM, 2018).
- Guidelines on the information to be contained in Environmental Impact Assessment Reports (Draft) Environmental Protection Agency (EPA, 2017).
- Best Practice Guidance for habitat Survey and Mapping, The Heritage Council. (Smith et al. 2011).

3.5 Baseline

To determine the baseline conditions at the site a review of all available information was made. When determining the pre-work conditions on-site, including the presence or absence of protected habitats and/or species, the precautionary principle was used where limited information was available.

A desk-based assessment was carried out to collate information regarding protected/notable species and statutorily designated nature conservation sites in, or within close proximity to, the study area. This included a data search for protected and notable species was conducted using the National Biodiversity Data Centre Mapping System (National Biodiversity Data Centre, 2021). A customised polygon was created to extract all the species data from the set Zone of Influence for this project.

Information for statutory designated sites including Special Protection Areas (SPAs), Special Areas of Conservation (SACs), Ramsar Sites, Natural Heritage Areas (NHAs) and proposed NHAs (pNHA) was collected from the online resources provided by the National Parks and Wildlife Service (NPWS).

Other information on the local area was obtained, including:

- NPWS, 2008. The Status of EU Protected Habitats and Species in Ireland. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin, Ireland (NPWS 2008).

- NPWS, 2019a. The Status of EU Protected Habitats and Species in Ireland. Habitats Assessment Volume 2. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin, Ireland.
- NPWS, 2019b. The Status of EU Protected Habitats and Species in Ireland. Species Assessment Volume 3. Habitats Assessment Volume 2. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin, Ireland.
- Environmental Protection Agency online databases on water quality (Available online at https://gis.epa.ie/EPAMaps/).
- Aerial photography available from www.osi.ie and Google Maps http://maps.google.com/ ;
- Online data available on Natura 2000 sites as held by the National Parks and Wildlife Service (NPWS) from www.npws.ie
- National Biodiversity Data Centre, 2021 – Species Distribution Maps; Available online at www.biodiversityireland.ie Accessed on various dates;
- All Ireland Red Data lists for vascular flora, mammals, butterflies, non-marine molluscs, dragonflies & damselflies, amphibians and fish;
- Water Framework Directive water maps (available online at http://www.wfdireland.ie/maps.html and https://www.catchments.ie/); and
- International Union for Conservation of Nature and Natural Resources (IUCN) Red List of Threatened Species (available online at http://www.iucnredlist.org).

3.5.1 Zone of Influence

The zone of influence (ZoI) for the project is based on a judgement of the likely extent of the ecological impacts. This will vary for different ecological features, depending on their sensitivities to environmental change. For the majority of the project, impacts will be limited to within the site boundary. **The Zone of** Influence (ZoI) for this project is noise disturbance (1km), air pollution (5km), surface water (5km + downstream hydrological connections), groundwater (5km) and any supporting habitat for SAC/SPA species (5km).

3.5.2 Field Surveys

A general ecological site walkover, including a habitat mapping survey, was conducted on the 18/02/2021 by William Mulville of JBA Consulting to inform the ecological baseline of the site. The site was revisited on 08/06/2021 by William Mulville to deploy static bat detectors at both Sites A and B, which were then collected six days later. An updated habitat survey was also carried out during these visits to Site A and B.

Aerial photographs and site maps assisted the habitat survey. Habitats have been named and described following A Guide to Habitats in Ireland by Fossitt (2000). Nomenclature for higher plants principally follows that given in Webb's An Irish Flora (Parnell and Curtis 2012).

The Survey methods were in general accordance with those outlined in the following documents:

- Guidelines for Assessment of Ecological Impacts of National Road Schemes (NRA, 2009).
- Best Practice Guidance for habitat Survey and Mapping. The Heritage Council. (Smith et al. 2011).
- Bat Mitigation Guidelines for Ireland. Irish Wildlife Manuals, No. 25. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland (Kelleher and Marnell, 2006);
- Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edition). Bat Conservation Trust (Collins, 2016);
- A conservation plan for Irish vesper bats, Irish Wildlife Manual No. 20. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland (McAney, 2006);
- The status of EU protected habitats and species in Ireland: Conservation status in Ireland of habitats and species listed in the European Council Directive on the Conservation of Habitats, Flora and Fauna 92/43/EEC. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government (NPWS, 2019);

- Bats and Appropriate Assessment Guidelines. Bat Conservation Ireland (Bat Conservation Ireland, 2012); and
- Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes. National Roads Authority. (NRA n.d.).

3.6 Water Framework Directive

In response to the increasing threat of pollution and the increasing demand from the public for cleaner rivers, lakes and beaches, the EU developed the Water Framework Directive (WFD). This Directive is unique in that, for the first time, it establishes a framework for the protection of all waters including rivers, lakes, estuaries, coastal waters and groundwater, and their dependent wildlife/habitats under one piece of environmental legislation for all European member states.

The WFD (Directive 2000/60/EC) is a substantial piece of EU water legislation that came into force in 2000. The overarching objective of the WFD is for the water bodies in Europe to attain Good or High Ecological Status. The Environment Protection Agency (EPA) is the competent authority in Ireland responsible for delivering the WFD. River Basin Management Plans (RBMP) have been created which set out measures to ensure that water bodies in the country achieve 'Good Ecological Status'.

Good Ecological Quality will depend on the quality of the individual quality elements on which the Ecological status is scored; namely the biological, chemical and morphological condition in a particular water body. Any reduction in any of these elements will result in a reduction of the overall ecological status.

3.6.1 Water Framework Status and Objectives

It is understood that the River Basin Management Plan (2018-2021) has been adopted by all local authorities in order to achieve the aims of the WFD. The Plan sets out the new approach that Ireland will take to enhance protection, prevention, and monitoring of Irish waterbodies. The main actions include:

- Improve waste water treatment;
- Conservation and leakage reduction;
- Scientific assessment of water bodies and implementation of local measures;
- A new collaborative Sustainability and Advisory Support Programme;
- Dairy Sustainability Initiative;
- Development of water and planning guidance for local authorities;
- Extension of Domestic Waste Water Treatment Systems grant Schemes; and
- A new Community Water Development Fund

Regardless of their current quality, surface waters should be treated the same in terms of the level of protection and mitigation measures employed, i.e. there should be no negative change in status.

3.7 Screening of Ecological Features

The ecological features identified during the walkover surveys and from desk-based assessments were reviewed.

No formal EIA screening has been completed for the project, so an informal screening process is presented at the start of the results section to ensure that the assessment focuses only on features where the impact could have important consequences for biodiversity (valued ecological features). Any features which are important beyond the site level were identified for further evaluation. Ecological features with little or no value beyond the site level were screened out and a short statement explaining this is given in the screening section.

An Appropriate Assessment (AA) Screening Report has been produced separate to this EcIA (JBA, 2021), to assess the potential for effects on Designated Natura 2000 sites. The AA Screening Report concluded there would not be likely significant effects on European sites arising from the proposed development, either alone or in-combination with other plans or projects.

3.8 Assessment of the Effects on Features

Ecological features include nature conservation sites, habitats, species assemblages/ communities, populations or groups of species. The assessment of the significance of predicted impacts on ecological features is based on both the 'value' of a feature, and the nature and magnitude of the impact that the project will have on it. The impact is based on the project which includes a certain amount of designed-in mitigation, including construction best practice measures that will be implemented with a high degree of certainty.

3.9 Valuation of Receptors

The value of designated sites, habitats and species populations is assessed with reference to:

- Their importance in terms of 'biodiversity conservation' value (which relates to the need to conserve representative areas of different habitats and the genetic diversity of species populations).
- Any social benefits that habitats and species deliver (e.g. relating to enjoyment of flora and fauna by the public).
- Any economic benefits that they provide.

The valuation of designated sites considers different levels of statutory and non-statutory protection. Assessment of habitat depends on several factors, including the size of the habitat, its conservation status and quality. The assessment also takes account of connected off-site habitat that may increase the value of the on-site habitat through association. Valuation of species depends on a number of factors including distribution, status, rarity, vulnerability, and the population size present.

Designated sites, habitats and species populations have been valued using the scale in Table 3-1

Level of Value	Examples of Criteria
International	An internationally important site e.g. Special Protection Area (SPA), Special Area of Conservation (SAC), Ramsar (or a site considered worthy of such designation). A regularly occurring substantial population of an internationally important species (listed on Annex IV of the Habitats Directive). Designated shellfish waters. Major fisheries area.
National	A nationally designated site e.g. Natural Heritage Area (NHA), a proposed Natural Heritage Area (pNHA), statutory Nature Reserve, or a site considered worthy of such designation. A viable area of a habitat type listed in Annex I of the Habitats Directive or of smaller areas of such habitat which are essential to maintain the viability of a larger whole. A regularly occurring substantial population of a nationally important species, e.g. listed on The Wildlife Act 1976 or The Wildlife (Amendment) Act 2000. A species included in the Irish Red Data Lists/Books. Significant populations of breeding birds.
Regional/County (South Dublin County)	Species and habitats of special conservation significance within South Dublin County. An area subject to a project/initiative under the County's Biodiversity Action Plan. A regularly occurring substantial population of a nationally scarce species.
Local (works site and its vicinity)	Areas of internationally or nationally important habitats which are degraded and have little or no potential for restoration. A good example of a common or widespread habitat in the local area. Species of national or local importance, but which are only present very infrequently or in very low numbers within site area.
Less than local	Areas of heavily modified or managed vegetation of low species diversity or low value as habitat to species of nature conservation interest.

	Common and widespread species.

.

Table 3-1: Examples of criteria used to define the value of ecological features

Level of Value	Examples of Criteria
International	An internationally important site e.g. Special Protection Area (SPA), Special Area of Conservation (SAC), Ramsar (or a site considered worthy of such designation). A regularly occurring substantial population of an internationally important species (listed on Annex IV of the Habitats Directive). Designated shellfish waters. Major fisheries area.
National	A nationally designated site e.g. Natural Heritage Area (NHA), a proposed Natural Heritage Area (pNHA), statutory Nature Reserve, or a site considered worthy of such designation. A viable area of a habitat type listed in Annex I of the Habitats Directive or of smaller areas of such habitat which are essential to maintain the viability of a larger whole. A regularly occurring substantial population of a nationally important species, e.g. listed on The Wildlife Act 1976 or The Wildlife (Amendment) Act 2000. A species included in the Irish Red Data Lists/Books. Significant populations of breeding birds.
Regional/County (South Dublin County)	Species and habitats of special conservation significance within South Dublin County. An area subject to a project/initiative under the County's Biodiversity Action Plan. A regularly occurring substantial population of a nationally scarce species.
Local (works site and its vicinity)	Areas of internationally or nationally important habitats which are degraded and have little or no potential for restoration. A good example of a common or widespread habitat in the local area. Species of national or local importance, but which are only present very infrequently or in very low numbers within site area.
Less than local	Areas of heavily modified or managed vegetation of low species diversity or low value as habitat to species of nature conservation interest. Common and widespread species.

Ecological Valuation may also be considered of Local Importance (higher value) or Local Importance (lower value) (Table 3-2).

Table 3-2: Examples of criteria used to define the value of ecological features of local importance (NRA, 2009)

Level of Value	Examples of Criteria
Local Importance (higher value)	Locally important populations of priority species or habitats or natural heritage features identified in the Local BAP, if this has been prepared Resident or regularly occurring populations (assessed to be important at the Local level) of the following: *Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; *Species of animal and plants listed in Annex II and/or IV of the Habitats Directive; *Species protected under the Wildlife Acts; and/or *Species listed on the relevant Red Data List.

Level of Value	Examples of Criteria
	Sites containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or populations of species that are uncommon in the locality Sites or features containing common or lower value habitats, including naturalised species that are nevertheless essential in maintaining links and ecological corridors between features of higher ecological value
Local Importance (lower value)	Sites containing small areas of semi-natural habitat that are of some local importance for wildlife; Sites or features containing non-native species that are of some importance in maintaining habitat links

3.9.1 Magnitude of Impacts

Ecological impacts can be categorised and assessed in a number of ways. They can be considered to be:

- Positive - A change which improves the quality of the environment.
- Neutral - A change that does not affect the quality of the environment.
- Negative - A change which reduces the quality of the environment. A negative impact can be sufficiently minimised or eliminated by the adoption of appropriate mitigation measures.
- Uncertain - When the full consequences of a change in the environment cannot be described.

In addition, the nature of impact can also be described in a number of ways, including:

- Direct/Indirect - a direct impact could include the loss of a species or habitat, whereas an indirect impact could be as a result of noise, dust or disturbance.
- Irreversible - when the character, distinctiveness, diversity or reproductive capacity of an environment is permanently lost. Alternatively, impacts can be temporary in nature, with the baseline condition restored after a period of time; this could occur over the short-term (1-2 years), medium-term (2-10 years) or long-term (+10 years).
- Cumulative - the addition of many small impacts to create one larger, more significant impact.
- Synergistic: Where the resultant impact is of greater significance than the sum of its constituents.

These factors are assessed together to determine the magnitude of the impact on the status of a habitat or species population, and on the integrity of the site that supports them. Professional judgement is then used to assign the impacts on the receptors to one of four classes of magnitude, detailed in Table 3-3.

Table 3-3: Definition of magnitude.

Magnitude	Definition
High	An irreversible or long-term impact on the integrity of a site or conservation status of a habitat, species assemblage/community, population or group. If adverse, this is likely to threaten its sustainability; if beneficial, this is likely to enhance its conservation status.
Medium	A medium to long-term impact on the integrity of a site or conservation status of a habitat, species assemblage/community, population or group, which if adverse, is unlikely to threaten its sustainability (or if beneficial, is likely to be sustainable but is unlikely to enhance its conservation status.
Low	A short-term but temporary impact on the integrity of a site or conservation status of a habitat, species assemblage/community, population or group that is within the range of variation normally experienced between years.

Magnitude	Definition
Negligible	A short-term but temporary impact on the integrity of a site or conservation status of a habitat, species assemblage/community, population or group that is within the normal range of annual variation.

3.9.2 Significance of impacts

The significance of an impact is a product of the value of the ecological feature and the magnitude of the impact on it, moderated by professional judgement. Table 3-4 below shows a matrix which is used for guidance in the assessment of significance, with impacts being considered to be of major, moderate or minor significance, or negligible. Impacts can also either be assessed as positive or negative using the same matrix.

Table 3-4: Significance of impacts matrix.

Value of feature	Magnitude of impact			
	High	Medium	Low	Negligible
International	Major	Major	Moderate	Neutral
National	Major	Moderate	Minor	Neutral
Regional / County	Moderate	Minor	Minor	Neutral
Local	Minor	Minor	Negligible	Neutral
Less than local	Negligible	Negligible	Negligible	Neutral

3.9.3 Residual Impacts

The project is assessed including some designed-in mitigation. This is done where mitigation is proven to be effective and will be implemented effectively with a high certainty. Where significant residual impacts are still identified, further mitigation measures will be proposed as part of the Ecological Impact Assessment process to avoid, reduce or minimise them. Each impact assessment section assigns a final significance level to the impact described, which considers and includes the implementation of any stated mitigation measures; these are the residual impacts.

3.10 Cumulative Impacts

Potential sources of cumulative impacts were identified based on the ecology of valued ecological features. Potential sources of cumulative impacts were sought within ranges, territories or catchments where there is the potential for a significant impact on a site or species. The plans and projects identified as potential sources of cumulative impacts are described in Section 5.

3.11 Limitations and Constraints

This EcIA is based on a site visit and existing data from the above-mentioned sources. The report necessarily relies on some assumptions and is inevitably subject to some limitations. These do not affect the conclusion, but the following points are recorded in order to ensure the basis of the assessment is clear:

- Surveyor bias may lead to differences of opinion with regards to the ecological value of the affected area; however, best professional judgement has been used at all times and surveyors were sufficiently experienced to be able to assess the likely impacts that have occurred.
- Information on the works and conditions on site are based on current knowledge at the time of writing. Changes to the site since surveys were undertaken cannot be accounted for. Any changes to the proposed works will require an assessment by a suitably qualified ecologist to determine if re-assessment is required.
- Adverse weather can cause delays to the schedule and alter the timing of works. This has been accounted for using a worst-case scenario where possible.

- The precautionary principle is used at all times when determining potential ecological sensitivity of the site.
- The results of this bat activity assessment can be applied with confidence for the month of June only, as bat activity will change along with the change of seasons, i.e. during the summer months bats are using their maternity roosting sites and commuting/foraging areas may differ as opposed to later in the season;
- Weather conditions may affect bat activity, but weather conditions during the surveys were within the optimal window;
- Bat detectors can only provide an index of activity rather than absolute numbers of bats;
- Bat detectors may not pick up all bats using the area as bat species may be using the site but may not always use echolocation when passing the static bat detector;
- *Myotis* bat species may not be able to be identified to species level due to the variability of frequencies and echolocation calls used by bats of this genus; and
- The precautionary principle is used at all times, i.e. the absence of physical evidence cannot fully rule out the presence of bats within the habitat, e.g. commuting or foraging within suitable bat habitats will leave no physical evidence for surveyors to record during surveys.

4 Baseline Conditions

These baseline conditions present information gathered from existing reports and desk-based sources as detailed in Section 3.6 and the site visits conducted on the 18 February 2021.

4.1 Desk-based Assessment

4.1.1 Designated Sites

This section lists the designated sites of National importance. The Zone of Influence (ZoI) for this project is a 5km general radius and any downstream hydrological connection (including transitional waters buffer) for statutory sites; and a general 5km radius for non-statutory sites. Table 4-1 below lists these designated sites with their respective importance and distance from the proposed site development**.** Figure 4-1 overleaf displays the locations of the statutory designated sites, with Figure 4-2 displaying the non-statutory (proposed and existing Natural Heritage Area) designated sites within the ZoI of the site. Table 4-2 and Table 4-3 displays site descriptions and their respective ecological features**.**

Table 4-1: Proximity and importance of designated sites within their respective ZoI buffers.

Name	Designation	Importance	Distance from site
Rye water Valley/Carton [001398]	SAC	International	2.0km
North Dublin Bay [000206]	SAC	International	18.5km
South Dublin Bay [000210]	SAC	International	16.6km
North Bull Island [004006]	SPA	International	18.5km
South Dublin Bay and River Tolka Estuary [004024]	SPA	International	15.4km
Grand Canal [002104]	pNHA	National	2.7km
Liffey Valley [000128]	pNHA	National	0.05km
Rye Water Valley / Carton [001398]	pNHA	National	2.0km
Royal Canal [002103]	pNHA	National	1.7km

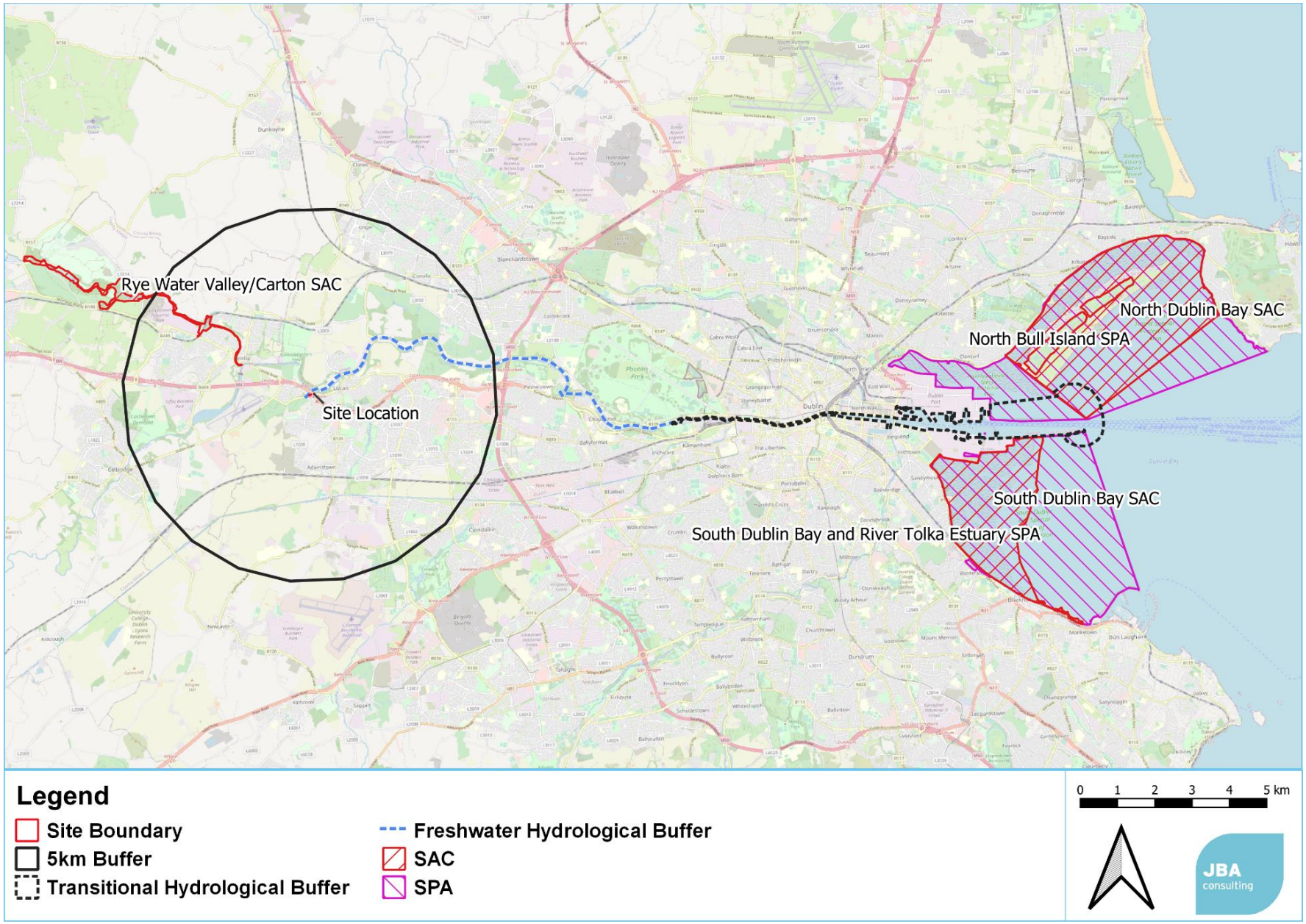


Figure 4-1: Statutory designated sites within the ZoI of the development (OSM, 2021)

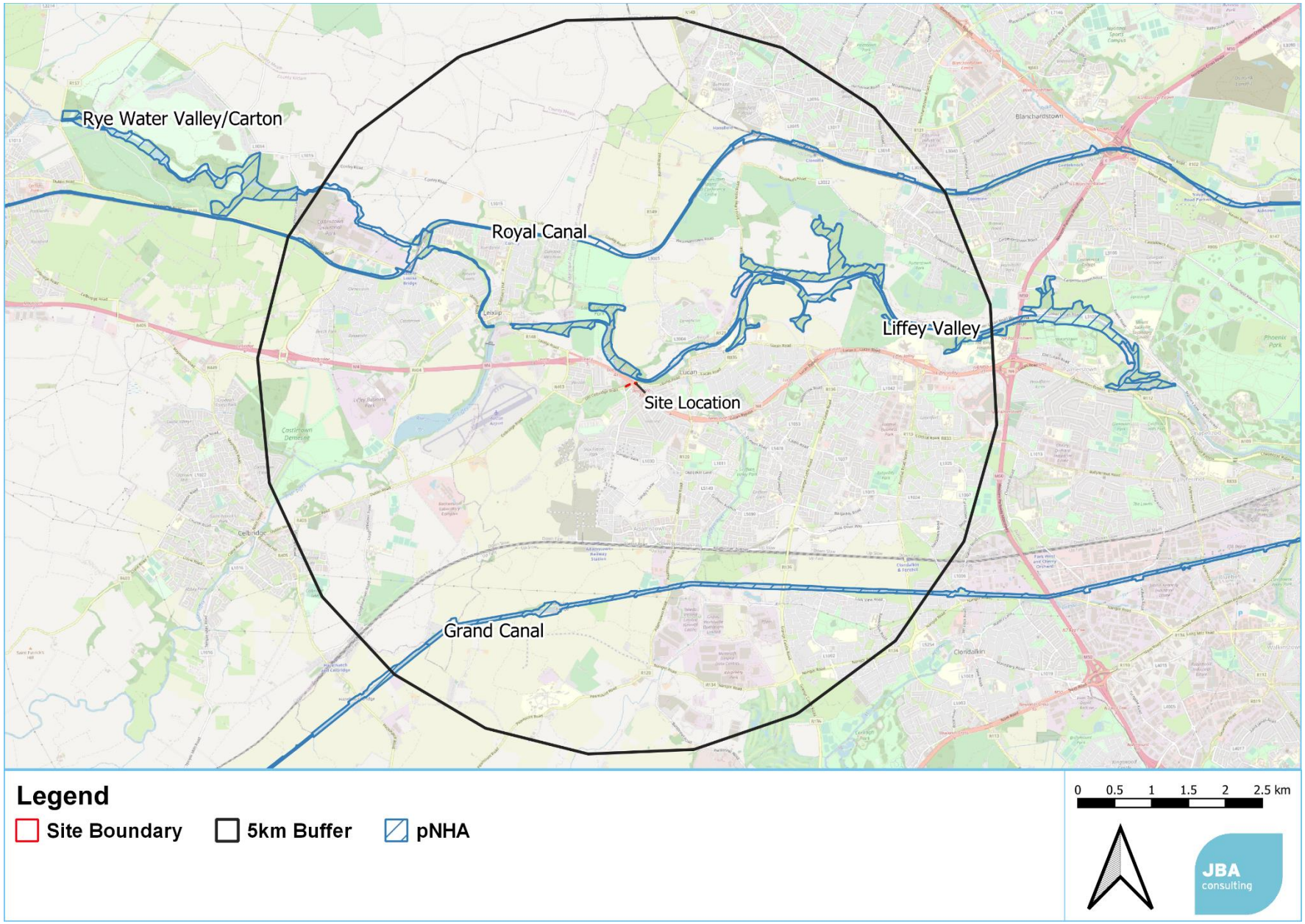


Figure 4-2: Non-statutory designated sites within their respective ZoI of the site works (OSM, 2021)

Table 4-2: Site briefs; Qualifying Interests; and project threats /pressures and their impacts and sources to the Natura 2000 sites within the ZoI.

Site Name	Brief	Qualifying Interests	Project-relevant Threats / Pressures: Impact (Source)
Rye Water Valley / Carton SAC	The Rye Water Valley / Carton SAC is a river valley site, which includes at its western end a large area of estate woodland and an artificial lake. The eastern section of the site includes a section of railway, canal and aqueduct; it continues as far as Leixlip town. The importance of the site lies in the presence of a number of rare plant and animal species and a rare habitat, i.e. thermal, mineral, petrifying spring. The spring gives rise to a calcareous marsh, the habitat for *Vertigo angustior* and *Vertigo moulinsiana*. This marsh is species-rich and holds a number of plant and insect species which are rare or locally uncommon in Ireland. Four Red Data Book plant species have been recorded from the site, two of which, *Hypericum hirsutum* and *Viola hirta* are legally protected. The woods at the eastern end of the site are also of some ornithological interest (NPWS, 2019).	- Petrifying Springs* [1130] - Narrow-mouthed Whorl Snail (*Vertigo angustior*) [1014] - Desmoulin's Whorl Snail (*Vertigo moulinsiana*) [1016] (NPWS, 2020)	Continuous urbanisation: Moderate impact (outside) Roads, motorways: Low impact (outside)# (Full list of threats / pressures - NPWS, 2019)
North Dublin Bay SAC	The North Bull Island sand spit is a relatively recent depositional feature, formed as a result of improvements to Dublin Port during the 18th and 19th centuries. The seaward side of the island has a fine sandy beach. A substantial area of shallow marine water is included in the site. The interior of the island is excluded from the site as it has been converted to golf courses. Nature conservation is a main land use within the site. The North Bull Island dune system is one of the most important systems on the east coast and is one of the few in Ireland that is actively accreting. It possesses extensive and mostly good quality examples of embryonic, shifting marram and fixed dunes, as well as excellent examples of humid dune slacks. Both Atlantic and Mediterranean salt marshes are well represented, and a particularly good marsh zonation is shown. The salt marshes grade into mudflats and sandflats, some of which are dominated by annual Salicornia species. Petalwort (*Petalophyllum ralfsii*) occurs at its only known station away from the western seaboard (NPWS, 2018a).	- Mudflats and sandflats not covered by seawater at low tide [1140] - Annual vegetation of drift lines [1210] - *Salicornia* and other annuals colonising mud and sand [1310] - Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] - Mediterranean salt meadows (*Juncetalia maritimi*) [1410] - Embryonic shifting dunes [2110] - Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120] - Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] - Humid dune slacks [2190] - Petalwort (*Petalophyllum ralfsii*) [1395] (NPWS, 2013a)	Urbanised areas, human habitation: High impact (outside) Walking, horse-riding and non-motorised vehicles: High impact (inside)# Antagonism with domestic animals: High impact (inside)# (Full list of threats / pressures - NPWS, 2018a)
South Dublin Bay SAC	This intertidal site extends from the South Wall at Dublin Port to the West Pier at Dun Laoghaire, a distance of c. 5 km. Several permanent channels exist, the largest being Cockle Lake. A small sandy beach occurs at Merrion Gates, while some bedrock shore occurs near Dun Laoghaire. A number of small streams and drains flow into the site. The designated site possesses a fine and fairly extensive example of intertidal flats.	- Mudflats and sandflats not covered by seawater at low tide [1140] - Annual vegetation of drift lines [1210] - *Salicornia* and other annuals colonising mud and sand [1310] - Embryonic shifting dunes [2110] (NPWS, 2013b)	Urbanised areas, human habitation: High impact (outside) Paths, tracks, cycling tracks: Moderate impact (inside)#

Site Name	Brief	Qualifying Interests	Project-relevant Threats / Pressures: Impact (Source)
	Sediment type is predominantly sand, with muddy sands in the more sheltered areas. A typical macro-invertebrate faunal assemblage exists within the SAC. The SAC has the largest stand of Dwarf Eelgrass (*Zostera nolti*) on the east coast (NPWS, 2018b).		Walking, horse-riding and non-motorised vehicles: High impact (inside)# Discharges: Moderate impact (both) (Full list of threats / pressures - NPWS, 2018b)
North Bull Island SPA	The North Bull Island sand spit is a relatively recent depositional feature, formed as a result of improvements to Dublin Port. The site is among the top ten sites for wintering waterfowl in the country. It supports internationally important populations of Brent Goose and Bar-tailed Godwit and is the top site in the country for both of these species. A further 14 species have populations of national importance, with particular notable numbers of Shelduck, Pintail, Grey Plover, and Red Knot. The SPA is a regular site for passage waders such as Ruff, Curlew Sandpiper and Spotted Redshank. The site supports Short-eared Owl in winter (NPWS, 2018c).	- Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] - Shelduck (*Tadorna tadorna*) [A048] - Teal (*Anas crecca*) [A052] - Pintail (*Anas acuta*) [A054] - Shoveler (*Anas clypeata*) [A056] - Oystercatcher (*Haematopus ostralegus*) [A130] - Golden Plover (*Pluvialis apricaria*) [A140] - Grey Plover (*Pluvialis squatarola*) [A141] - Red Knot (*Calidris canutus*) [A143] - Sanderling (*Calidris alba*) [A144] - Dunlin (*Calidris alpina*) [A149] - Black-tailed Godwit (*Limosa limosa*) [A156] - Bar-tailed Godwit (*Limosa lapponica*) [A157] - Curlew (*Numenius arquata*) [A160] - Redshank (*Tringa totanus*) [A162] - Turnstone (*Arenaria interpres*) [A169] - Black-headed Gull (*Chroicocephalus ridibundus*) [A179] - Wetland and Waterbirds [A999] (NPWS, 2015a)	Urbanised areas, human habitation: High impact (outside) Walking, horse-riding and non-motorised vehicles: High impact (inside)# (Full list of threats / pressures - NPWS, 2018c)
South Dublin Bay and River Tolka Estuary SPA	This designated site comprises a substantial part of Dublin Bay. It includes virtually all of the intertidal area in the south bay, as well as much of the Tolka Estuary to the north of the River Liffey. A portion of the shallow bay waters is also included. The sediments are predominantly well-aerated sands. The sands support the largest stand of Dwarf Eelgrass on the east coast of Ireland. Sediments in the Tolka Estuary vary from soft thixotropic muds with a high organic content in the inner estuary	- Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] - Oystercatcher (*Haematopus ostralegus*) [A130] - Ringed Plover (*Charadrius hiaticula*) [A137] - Grey Plover (*Pluvialis squatarola*) [A141] - Red Knot (*Calidris canutus*) [A143] - Sanderling (*Calidris alba*) [A144] - Dunlin (*Calidris alpina*) [A149]	Urbanised areas, human habitation: High impact (outside) Walking, horse-riding and non-motorised vehicles: High impact (inside)#

Site Name	Brief	Qualifying Interests	Project-relevant Threats / Pressures: Impact (Source)
	to exposed, well aerated sands off the Bull Wall. The site possesses extensive intertidal flats which support wintering waterfowl which are part of the overall Dublin Bay population. It regularly has an internationally important population of Brent Geese, which feeds on Dwarf Eelgrass in the autumn. It has nationally important numbers of a further 6 species including: Oystercatcher, Ringed Plover, Red Knot, Sanderling, Dunlin and Bar-tailed Godwit. It is an important site for wintering gulls, especially Black-headed Gull and Common Gull (*Larus canus*). South Dublin Bay is the premier site in Ireland for Mediterranean Gull (*Larus melanocephalus*), with up to 20 birds present at times. Is a regular autumn roosting ground for significant numbers of terns, including Roseate Terns, Common Tern and Artic Tern (NPWS, 2018d).	- Bar-tailed Godwit (*Limosa lapponica*) [A157] - Redshank (*Tringa totanus*) [A162] - Black-headed Gull (*Chroicocephalus ridibundus*) [A179] - Roseate Tern (*Sterna dougallii*) [A192] - Common Tern (*Sterna hirundo*) [A193] - Arctic Tern (*Sterna paradisaea*) [A194] - Wetland and Waterbirds [A999] (NPWS, 2015b)	(Full list of threats / pressures - NPWS, 2018d)

* = priority Annex I habitat

= indirect threat via the increase in the local populace and workforce; and recreational activities as a result of the development

Table 4-3: Site briefs and ecological features of proposed Natural Heritage Areas within their respective 5km ZoI.

Site Name	Brief	Ecological Features of Conservation Concern
Grand Canal pNHA	The Grand Canal is a man-made waterway linking the River Liffey at Dublin with the Shannon at Shannon Harbour and the Barrow at Athy. The Grand Canal proposed Natural Heritage Area (pNHA) comprises the canal channel and the banks on either side of it. A number of different habitats are found within the canal boundaries - hedgerow, tall herbs, calcareous grassland, reed fringe, open water, scrub and woodland. The diversity of the water channel is particularly high in the eastern section of the Main Line - between the Summit level at Lowtown and Inchicore. Otter spraints are found along the towpath, particularly where the canal passes over a river or stream. The Smooth Newt (*Lissotriton vulgaris*) breeds in the ponds on the bank at Gollierstown in Co. Dublin. The rare and legally protected Opposite-leaved Pondweed (*Groenlandia densa*) (Flora Protection Order 1987) is present at a number of sites in the eastern section of the Main Line, between Lowtown and Ringsend Basin in Dublin (NPWS, 2009b).	- Otter (*Lutra lutra*) - Smooth Newt (*Lissotriton vulgaris*) - Opposite-leaved Pondweed (*Groenlandia densa*)
Liffey Valley pNHA	The Liffey Valley site is situated along the River Liffey between Leixlip Bridge on the Kildare-Dublin border and downstream of the weir at Glenaulin, Palmerstown, Co. Dublin. The river is a Salmon river and there are a series of weirs along the river between Palmerstown and Leixlip. The main terrestrial habitat included within the site is mixed deciduous woodland on fertile, limey alluvium and boulder clay, in which Beech is dominant in some areas. These woodlands occur on both sides of the river and normally consist of old estate woodlands. A wet marsh occurs on the strip of land between the Mill Race and the river east of the metal bridge and west of the paint factory. This marsh is fed by seepage from the Mill Race and plant species such as Bulrush (T*ypha latifolia*), Marsh-marigold (*Caltha palustris*) and sweet-grass (*Glyceria* spp.) occur here. The threatened Green Figwort (*Scrophularia umbrosa*), a species listed in the Irish Red Data Book, is recorded from a number of stations along the river within the site. The rare and legally protected Hairy St. John's-wort (*Hypericum hirsutum*) (Flora Protection Order 1987) has been recorded from the woodlands in this site. The threatened Yellow Archangel, listed in the Irish Red Data Book, is also recorded from these woodlands (NPWS, 2009d).	- Atlantic Salmon (*Salmo salar*) - Green Figwort (*Scrophularia umbrosa*) - Hairy St. John's-wort (*Hypericum hirsutum*) - Yellow Archangel (*Lamiastrum galeobdolon*)
Rye Water Valley / Carton pNHA	As per the Natura 2000 SAC description.	As per those outlined in Natura 2000 SAC description.
Royal Canal pNHA	The Royal Canal is a man-made waterway linking the River Liffey at Dublin to the River Shannon near Tarmonbarry. A number of different habitats are found within the canal boundaries - hedgerow, tall herbs, calcareous grassland, reed fringe, open water, scrub and woodland. The hedgerow, although diverse, is dominated by Hawthorn (*Crataegus monogyna*). The vegetation of the towpath is usually dominated by grass species. Otter spraints are found along the towpath, particularly where the canal passes over a river or stream. The rare and legally protected Opposite-leaved Pondweed (Flora Protection Order 1987) is present at one site in Dublin, between Locks 4 and 5. *Tolypella intricata* (a stonewort listed in the Red Data Book as being vulnerable) is also in the Royal Canal in Dublin, the only site in Ireland where it is now found. The ecological value of the canal lies more in the diversity of species it supports along its linear habitats than in the presence of rare species. It crosses through agricultural land and therefore provides a refuge for species threatened by modern farming methods (NPWS, 2009f).	- Otter (*Lutra lutra*) - Opposite-leaved Pondweed (*Groenlandia densa*) - *Tolypella intricata*

4.1.2 Screening of designated sites

An AA Screening has been carried out for this project by JBA (2021). Following initial screening, and based upon best scientific judgement it is concluded that there will be **no likely significant effects** from the project on the following Natura 2000 sites within the Zone of Influence:

- Rye Water Valley/Carton SAC [001398]
- North Dublin Bay SAC [000206]
- South Dublin Bay SAC [000210]
- North Bull Island SPA [004006]
- South Dublin Bay and River Tolka Estuary SPA [004024]

All other protected sites can be screened in as they are within in the Zone of Influence of 5km. These sites include:

- Grand Canal pNHA [002104]
- Liffey Valley pNHA [000128]
- Rye Water Valley / Carton pNHA [001398]
- Royal Canal pNHA [002103]

4.1.3 Protected Species

National Biodiversity Data Centre (NBDC)

Records of protected flora and fauna including invertebrates, amphibians, fish, birds and mammals collated from the NBDC (2021) database, present within the surrounding 5km within the past 10 years are listed in Appendix D. This list includes their level of protection, if they are red or amber listed on the International Union for the Conservation of Nature and Natural Resources (IUCN) Red List and the date of the last record of this species at this location.

4.1.4 Invasive Non-native Species

The records from the NBDC (2021) database, show that a number of high-impact, invasive non-native species have been present within the 2km buffer zone of the proposed within the past 10 years. These species are displayed in Table 4-4 below.

Table 4-4: High-impact invasive non-native species within 2km of the site

Invasive non-native species	Proximity to site
Cherry Laurel *Prunus laurocerasus*	Within 0.5km
Eastern Grey Squirrel *Sciurus carolinensis*	Within 0.2km
Giant Hogweed *Heracleum mantegazzianum*	Within 0.8km
Himalayan Balsam *Impatiens glandulifera*	Within 0.4km
Japanese Knotweed *Fallopia japonica*	Within 2.0km
American Mink Neovison vison	Within 0.4km

4.2 Water Framework Directive

4.2.1 Surface Water Status

The current WFD status (2013-2018) of the Lucan Stream, section LIFFEY_170, of the Liffey sub-catchment (Liffey_SC_090), is 'Good', though its current risk level is under review (EPA, 2021).

The proposed development will need to ensure that the goal of 'Good Status' is achievable by the 2021 target date, and that the proposed works will not result in any reduction of status.

4.2.2 Groundwater Status

The groundwater body which underlies the proposed works site is the Dublin groundwater body (IE_EA_G_008). The WFD status for the groundwater bodies is currently marked as 'Good'; while its risk status is currently under review (EPA, 2021). The bedrock underlying the proposed site is comprised of dark-grey to black, fine-grained, occasionally cherty, micritic limestones that weather paler, usually to pale grey. There are also rare dark coarser grained calcarenitic limestones, sometimes graded, and interbedded dark-grey calcar. This bedrock is overlain with gravelly alluvium soil, with low subsoil permeability characteristics. As result of the above characteristics the site's aquifer vulnerability status is rated as 'High' (GSI, 2021).

The proposed development will need to ensure that the proposed construction works will have no negative effect on these water bodies and will support their maintaining 'Good' status into the future.

4.3 Site Visits

A baseline ecological site walkover (Sites A and B), including habitat mapping, was conducted by JBA Ecologist, William Mulville on the 18 February 2021. The site was revisited on 08/06/2021 by William Mulville to deploy static bat detectors at both Sites A and B, which were then collected six days later. An updated habitat survey was also carried out during these visits to Site A and B.

Habitats and species recorded are presented in detail in the following sections.

4.4 Habitats

The value of each habitat is based on the site visit. Habitats recorded in and around the site boundary were recorded and are displayed in Table 4-5 and Figure 4-3 overleaf. The habitat is also available to view in Appendix E.

Table 4-5: Habitats recorded during site visit.

Habitat	Fossitt Code
Stone walls and other stonework	BL1
Buildings and other artificial surfaces	BL3
Amenity (improved) grassland	GA2
Dry meadows and grassy verges	GS2
Eroding / upland rivers	FW1
(Mixed) broadleaved woodland	WD1
Treelines	WL2
Scrub	WS1
Ornamental/non-native shrub	WS3

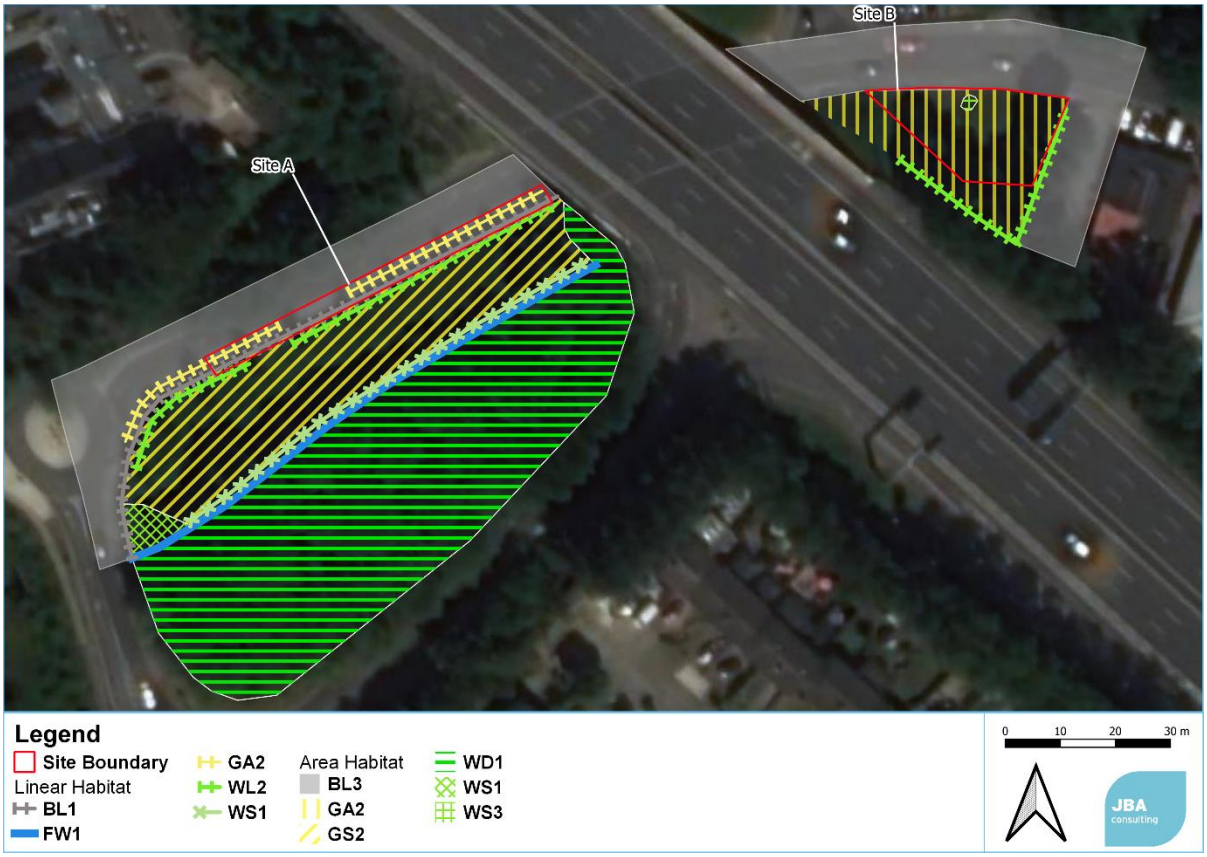


Figure 4-3: Habitat Map

4.4.1 Stone walls and other stonework (BL1)

Site A:

A concrete block wall runs the length of the western site along its southern boundary. The wall is gated towards its western end, allowing access into the adjacent grassland (

Figure 4-4 below). This habitat is considered to have less than local ecological importance.

Figure 4-4: The western site section, with accompanying wall, footpath, amenity grass and roadway

4.4.2 Buildings and other artificial surfaces (BL3)

Site A:

The artificial surfaces which form this habitat in the western site section includes pedestrian footpaths; a bus stop; and tarmacadam, i.e. Leixlip Road (

Figure 4-4). This habitat is considered to have less than local ecological importance.

Site B:

The artificial surfaces which make up this habitat in the eastern site section includes pedestrian footpaths and tarmacadam, i.e. Leixlip Road and restaurant takeaway parking area. This habitat is considered to have less than local ecological importance.

4.4.3 Amenity (improved) grassland (GA2)

Site B:

Amenity grassland dominates the eastern site section (Figure 4-5). The floral species in this habitat was comprised of Perennial Rye-grass *Lolium perenne*; False Oat-grass *Arrhenatherum elatius*; Thistle *Cirsium* spp.; Cow Parsley *Anthriscus sylvestris*; Dock *Rumex* spp.; Ribwort Plantain *Plantago lanceolata*; Daisy *Bellis perennis*; Meadow Buttercup *Ranunculus acris*; Common Dandelion *Taraxacum officinale*; Creeping Cinquefoil *Potentilla reptans*; Bush Vetch *Vicia sepium*; Creeping Buttercup *Ranunculus repens*; Germander Speedwell *Veronica chamaedrys*; and Cleavers *Galium aparine*. Species diversity was generally higher at the less frequently maintained edges by the adjacent treelines.

Figure 4-5: Eastern site section dominated by amenity grassland and bordered by treelines

4.4.4 Dry meadows and grassy verges (GS2)

Site A:

A dry meadow grassland is located directly south of the western site section (Figure 4-6 overleaf). Floral species recorded in this habitat included False Oat-grass; Meadow Foxtail *Alopecurus pratensis*; Cock's Foot *Dactylis glomerata*; Yorkshire Fog *Holcus lanatus*; Common Bent *Agrostis capillaris*; Perennial Rye-grass; Dock spp.; Thistle spp.; Meadow Buttercup; Ribwort Plantain; Creeping Cinquefoil; Creeping Buttercup; Common Dandelion; Bush Vetch; Germander Speedwell; Daisy; Red Clover *Trifolium pratense*; Common Sorrel *Rumex acetosa*; Perennial Sowthistle *Sonchus arvensis*; Ragwort *Jacobaea vulgaris*; Cut-leaved Crane's-bill *Geranium dissectum*;Cow Parsley; Hogweed *Heracleum sphondylium*;

and Nettle *Urtica dioica*. The three latter species dominated the wetter areas bordering the scrub along the Lucan Stream. White-tailed Bumblebee *Bombus lucorum* was observed utilising this habitat.

Figure 4-6: The dry meadow grassland immediately south of the western site section

4.4.5 Eroding / upland rivers (FW1)

Site A:

The Lucan Stream is located approximately 15m south of the western site section. The stream was approximately 1.75m - 2m in width and 20- 30cm in depth. This eroding river habitat did not support any instream vegetation along this stretch of the Lucan Stream (Figure 4-7). The banks of the stream were colonised by Cow Parsley, Creeping Buttercup; Yellow Iris *Iris pseudacorus*; Ivy *Hedera hibernica*; Ground-ivy *Glechoma hederacea*; Common Reed *Phragmites australis*; Hart's Tongue-fern *Asplenium scolopendrium*; and Willow *Salix* spp. saplings.

Figure 4-7: Lucan Stream with woodland (right bank) and wet scrub (left bank) species lining its banks

4.4.6 (Mixed) broadleaved woodland (WD1)

Site A:

A mixed broadleaved woodland is located along the right bank of the Lucan Stream, and it crosses over the stream where the culvert begins, bringing it within 10m of the eastern boundary of the western site section (Figure 4-6). Species recorded in this habitat included Ash *Fraxinus excelsior*; Silver Birch *Betula pendula*; Elder *Sambucus nigra*; Sycamore *Acer pseudoplatanus;* Horse-chestnut *Aesculus hippocastanum*; Willow; Hogweed *Heracleum sphondylium*; Ivy; Ground-ivy; Cow Parsley; and Hart's Tongue-fern. Wood Pigeon *Columba palumbus* was recorded utilising this habitat.

4.4.7 Treelines (WL2)

Site A:

A treeline habitat comprised of Silver Birch, with a Beech *Fagus sylvatica* hedging understorey runs along the southern border of the western site section (Figure 4-6). Wood Pigeon was recorded utilising this habitat.

Site B:

Treeline habitat runs along the southern, eastern and western boundaries of the eastern site section (Figure 4-5). Floral species recorded in this habitat include Silver Birch; Cypress *Cupressus* spp.; Elder; and Sycamore; with Ivy and Hogweed present in the understorey. The invasive non-native Cherry Laurel *Prunus laurocerasus* was recorded within this habitat. This habitat is considered to have high local ecological importance.

4.4.8 Scrub (WS1)

Site A:

Scrub was present along the left bank of this stretch of the Lucan Stream, with a more established growth towards the western bridge culvert. Floral species recorded in this habitat included Bramble *Rubus fructicosus agg*.; Willowherb *Epilobium* spp.; Hogweed; Dogwood *Cornus* spp.; Nettle and Willow saplings. This habitat can provide cover for mammals and nesting habitat for birds and is considered to have low local ecological importance.

4.5 Protected Flora

No protected floral species were recorded by the JBA Ecologist during the ecological walkover survey of the proposed site. Furthermore, the NBDC shows no record of any protected flora species being present within site or its immediate vicinity (NBDC, 2021).

4.6 Protected Fauna

4.6.1 Otter

The ecological walkover survey found no evidence of Otter *Lutra lutra* habitation within or directly adjacent to sites A or B. However, it is highly likely that the River Liffey, located immediately downstream from the Lucan Stream, supports an Otter population. Under the precautionary principal, Otter will still be examined in the mitigations section of this report. Otter is considered to be of international ecological importance given the protection afforded to it under Annexes II and IV of the EU Habitats Directive.

4.6.2 Badger

The ecological walkover survey found no evidence of Badger *Meles meles* habitation within or directly adjacent to sites A or B. However, there is a recent record from 2013 (NBDC) observing Badger activity within 100m of the site. Under the precautionary principal, Badger will still be examined in the mitigations section of this report. In the context of this site, Badger is considered to have county level ecological importance.

4.6.3 Other mammals (Irish Hare and Hedgehog)

Other mammals protected under the Wildlife Act and/or the EU Habitats Directive that have been recorded under the NBDC within 2km of the site include:

- Irish Hare *Lepus timidus subsp. hibernicus*
- Hedgehog *Erinaceus europaeus*

No evidence of these mammals was found during the ecological survey, but they may occur within the vicinity of the development. Under the precautionary principal, these species will still be examined in the mitigation section of this report. These species are considered to be of high local ecological importance.

4.6.4 Bats

Desk Study

Five species of bat, namely Leisler's Bat *Nyctalus leisleri*; Common Pipistrelle *Pipistrellus pipistrellus*; Soprano Pipistrelle *Pipistrellus pygmaeus*; Daubenton's Bat *Myotis daubentonii*; and Whiskered Bat *Myotis mystacinus* have been recorded in recent years within 5km of the proposed development (NBDC, 2021). Bat species are regarded as being of international ecological importance given the level of EU protections afforded to them under the Habitats Directive.

Leisler's Bat

The largest of the Irish bats, Leisler's Bat has distinctive level flight at greater heights than the other Irish species, from which it dives down after dung flies and beetles, with its echolocation frequency calls operating primarily within 20-30kHz. It can be seen soon after sunset flying over open spaces such as parks and fields, as well as woodlands and river valleys. Leisler's Bat is rare in Britain and the rest of Europe, but it is relatively common in Ireland. For this reason, the Irish population of Leisler's Bat is considered to be of International Importance The population is monitored by the Car-based Bat Monitoring Scheme and its annual trend has shown significant increases since 2003 (IUCN, 2021; BCI, 2021).

This species was also recorded as being present on-site during activity surveys.

Common Pipistrelle

The smallest of Ireland's bat species, the Common Pipistrelle forages in a variety of habitats including open woodland and woodland edges, shrubland, farmland, rural gardens and urban areas. It has a rapid, twisting flight as they pursue their small prey items of midges, mosquitoes and small moths. Their echolocation frequency calls typically fall within the 40-50kHz range. They are most likely to be seen flying around soon after dusk in both urban and rural areas. The population is monitored via the Car-based Bat Monitoring Scheme, which suggests the Common Pipistrelle has seen a notable population increase since 2003 (IUCN, 2021; BCI, 2021).

This species was also recorded as being present on-site during activity surveys.

Soprano Pipistrelle

Equal in size to the Common Pipistrelle, the Soprano Pipistrelle typically forages around open woodland and woodland edges, shrubland, farmland, rural gardens, urban areas and wetlands, and is more closely associated with water than the Common Pipistrelle. It's diet and foraging technique is similar to that of the Common Pipistrelle, but with a preference for small Diptera species (especially aquatic midges) and a higher frequency echolocation call, which generally ranges from 50-60kHz. The Soprano Pipistrelle populations is monitored through the Car-based Bat Monitoring Scheme. The data recorded from the scheme suggests that the populations has increased significantly since 2003 (IUCN, 2021; BCI, 2021).

This species was also recorded as being present on-site during activity surveys.

Daubenton's Bat

Often referred to as the 'water bat', Daubenton's Bat is easily recognised in flight by its low, level flight a few centimetres above the surface of lakes, slow-moving rivers and canals. The bat skims above the surface of the water in search of caddisflies, mayflies and midges, and may even scoop prey from the water surface using its large feet or scooping them up using its tail membrane. Daubenton's Bat can be detected between the frequencies of 35–70kHz. The Daubenton's Bat annual trend is monitored using a volunteer-based programme – the All Ireland Daubenton's Bat Waterways Survey. This scheme has

been ongoing since 2006 and the Daubenton's bat trend has been reasonably stable since this time (IUCN, 2021; BCI, 2021).

Whiskered Bat

An uncommon *Myotis* sp., there is limited data on the Whiskered Bat within in Ireland. The Whiskered Bat inhabits forest, woodland edge, shrubland, open meadows, steppe and wooded landscape near to water sources, but is generally more a house-dwelling than woodland bat, and is can be sighted in parks, gardens and villages. It roosts in colonies, living in trees, amongst rocks, and in livestock pens, and is also known to roost in caves. It hunts exclusively near inland waters, but feeds on non-aquatic flying insects, such as mosquitoes. Whiskered Bat can typically be recorded at a wide frequency range 35-80kHz. There is an estimated current population of fewer than one thousand individuals in Ireland (IUCN, 2021; BCI, 2021).

Bat Static Activity Survey

A static bat detector was placed along the boundary of Sites A and B, facing inwards toward the centre of the site; ensuring that any bats passing through the sites would be detected if calling. The results from the analysis of the static bat detector are shown in Table 4-6 and Table 4-7 below.

Table 4-6: Number of bat call recordings for individual species at Site A (June 2021)

Species	Dates						Overall
	08/06	09/06	10/06	11/06	12/06	13/06	Total
Leisler's Bat	44	42	22	19	70	88	**285**
Common Pipistrelle	7	6	2	5	6	1	**27**
Soprano Pipistrelle	1	2	2	1	1	2	**9**
Myotis sp.	0	0	0	0	3	3	**6**
Daily Total	**52**	**50**	**26**	**25**	**80**	**94**	**327**

Table 4-7: Number of bat call recordings for individual species at Site B (June 2021)

Species	Dates						Overall
	08/06	09/06	10/06	11/06	12/06	13/06	Total
Leisler's Bat	21	0	47	0	0	0	**68**
Common Pipistrelle	2	0	5	0	0	0	**7**
Soprano Pipistrelle	6	0	2	0	0	0	**8**
Myotis sp.	0	0	0	0	0	0	**0**
Daily Total	**29**	**0**	**54**	**0**	**0**	**0**	**83**

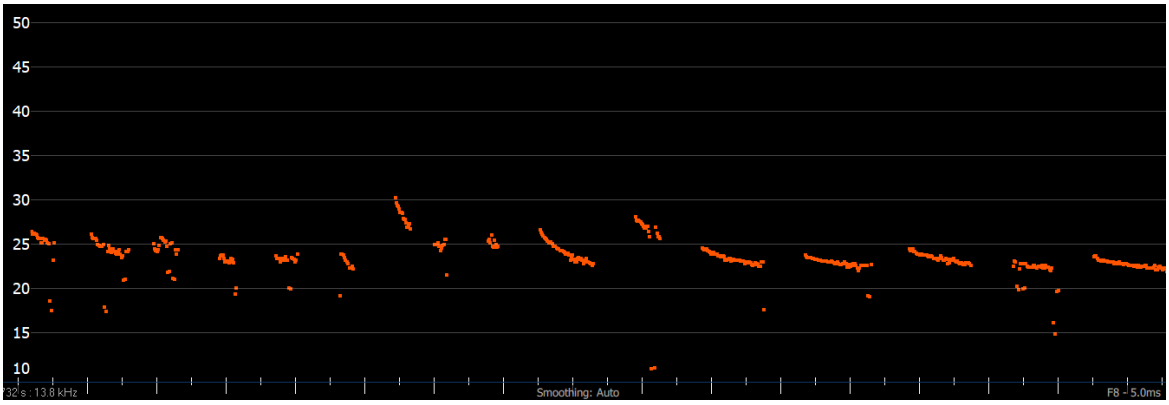


Figure 4-8: Recording of Leisler's Bat calls

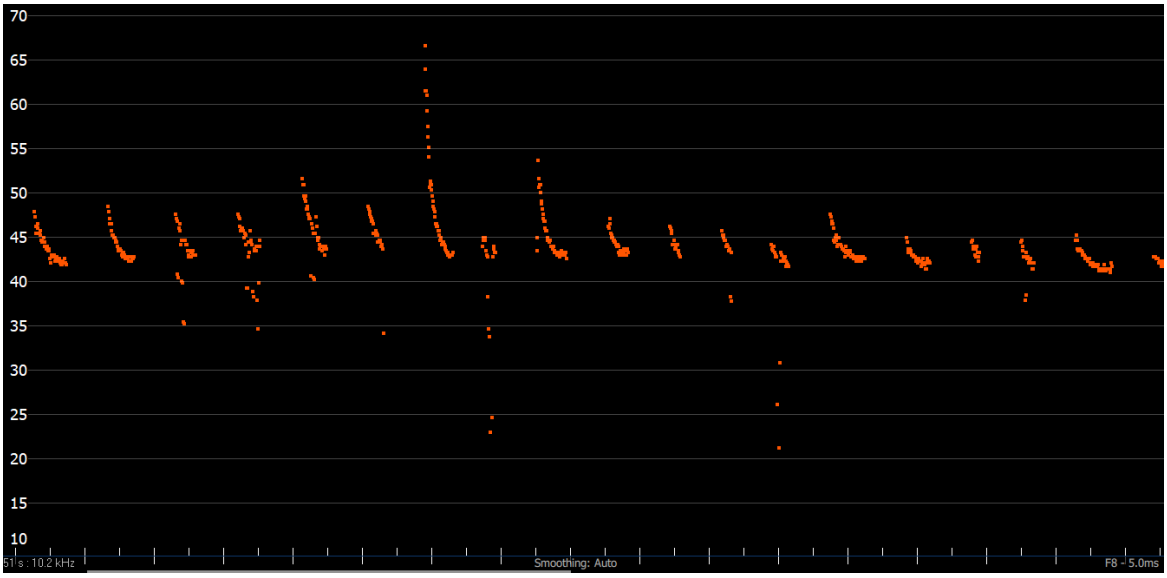


Figure 4-9: Recording of Common Pipistrelle calls

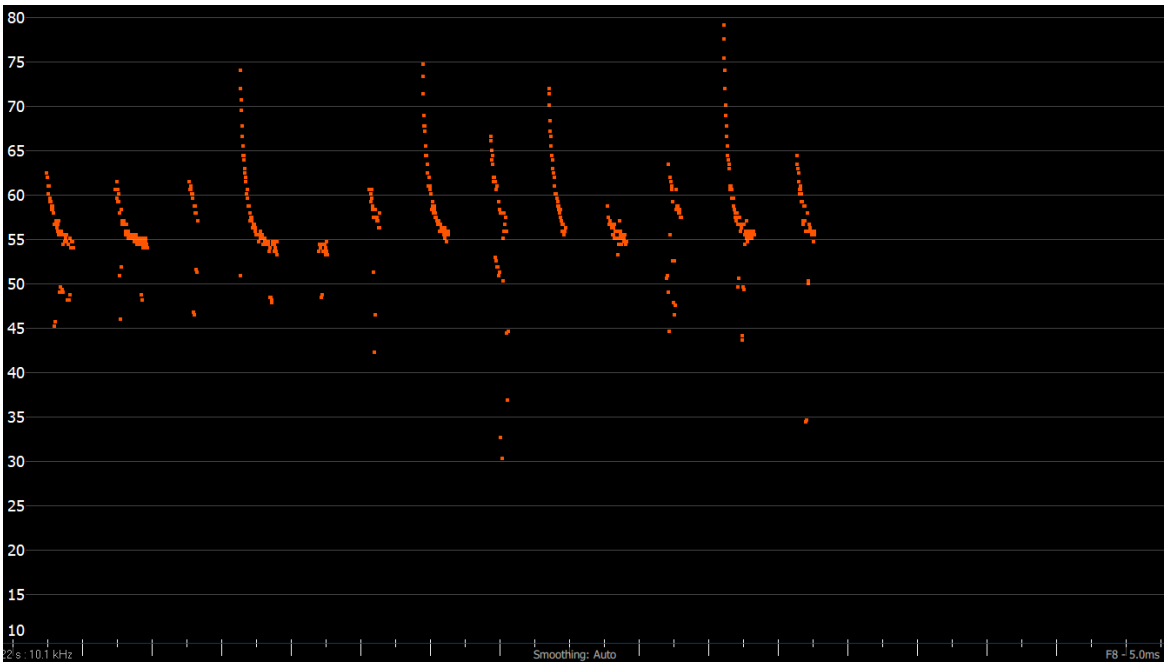


Figure 4-10: Recording of Soprano Pipistrelle calls

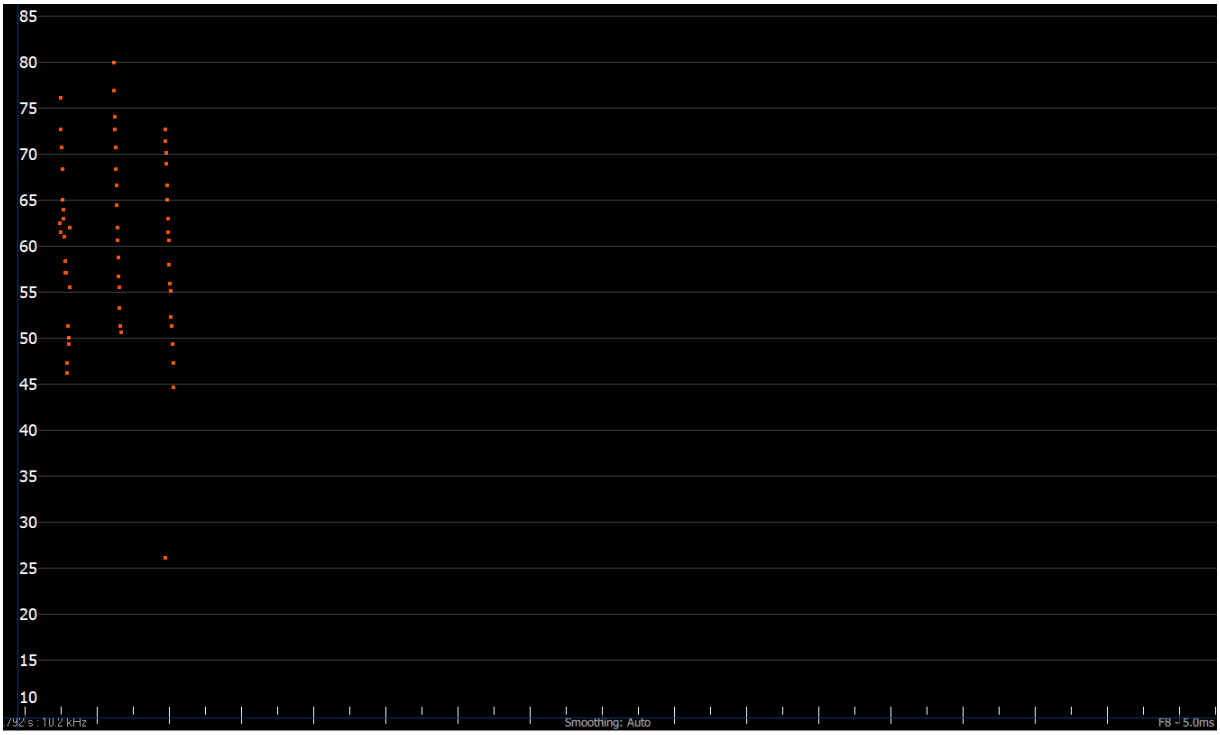


Figure 4-11: Recording *Myotis* sp. calls

4.6.5 Breeding birds

During the ecological walkover survey Wood Pigeon was recorded in Site A by the JBA Ecologist. The Wood Pigeon is protected under Annexes II and III of the EU Bird's Directive. It is possible that this species is nesting within the treeline and woodland habitats which border the sites A and B. The proposed site has been valued as being of high local ecological importance (higher value) for breeding birds.

4.6.6 Common Frog

While Common Frog *Rana temporaria* was not recorded during the walkover survey, the Lucan Stream adjacent to the site is likely to support a Frog population. Common Frog is protected under Annex V [1213] of the EU Habitats Directive, Appendix III of the Berne Convention and the Wildlife Act 1976 (& Amendments). Common Frog are considered to be of high local ecological importance.

4.6.7 European Eel, River Lamprey and Atlantic Salmon

European Eel *Anguilla anguilla*; River Lamprey *Lampetra fluviatilis*; and Atlantic Salmon *Salmo salar* have been recorded downstream of the site in the River Liffey (IFI, 2015). European Eel currently has a Critically Endangered IUCN status and is protected under the OSPAR Convention. River Lamprey and Atlantic Salmon are currently protected under Annex II and V of the EU Habitats Directive. Additionally, Atlantic Salmon is currently considered to be Vulnerable under Ireland's Freshwater Fish Red List. European Eel; River Lamprey and Atlantic Salmon are all regarded as being of international ecological importance given the level international protections afforded to them under the OSPAR Convention and EU Habitats Directive.

4.7 Invasive Non-native species

One invasive non-native species, namely Cherry Laurel, was recorded by the JBA Ecologist during the ecological walkover survey of eastern Site B. Cherry Laurel is a high impact invasive species but is not currently listed on the third schedule of the EC (Birds and Natural Habitats) Regulations 2011 S.I. No. 477/2011. The NBDC shows no record of any additional invasive non-native species being present on-site (NBDC, 2021).

4.8 Screening of Designated Sites & Ecological Features

The screening of designated sites and ecological features identified during the desktop study and ecological survey are given in Table 4-8. Sites and features screened out are not considered further in this assessment. Ecological features carried forward are assessed for potential impact during construction and operation in the following sections.

Table 4-8: Summary of ecological features and the screening assessment.

Designated site / Ecological feature	Value	Screening
Rye water Valley/Carton SAC	International	Screened out (JBA, 2021 - AA Screening)
North Dublin Bay SAC	International	Screened out (JBA, 2021 - AA Screening)
South Dublin Bay SAC	International	Screened out (JBA, 2021 - AA Screening)
North Bull Island SPA	International	Screened out (JBA, 2021 - AA Screening)
South Dublin Bay and River Tolka Estuary SPA	International	Screened out (JBA, 2021 - AA Screening)
Grand Canal pNHA	National	Screened out (lack of connectivity)
Liffey Valley pNHA	National	**Screened in**
Rye Water Valley / Carton pNHA	National	Screened out (lack of connectivity)
Royal Canal pNHA	National	Screened out (lack of connectivity)
Stone walls and other stonework	Less than local	Screened out
Buildings and artificial surfaces	Less than local	Screened out
Amenity (improved) grassland	Less than local	Screened out
Dry meadows and grassy verges	High Local	**Screened in**
Eroding / upland rivers	County	**Screened in**
Mixed) broadleaved woodland	High Local	**Screened in**
Treelines	High Local	**Screened in**
Scrub	Low Local	**Screened in**
Otter	International	**Screened in**
Badger	County	**Screened in**
Other mammals (Irish Hare & Hedgehog)	High Local	**Screened in**
Bats	International	**Screened in**
Breeding Birds	High Local	**Screened in**
Common Frog	High Local	**Screened in**
European Eel; River Lamprey & Atlantic Salmon	International	**Screened in**

5 Other Relevant Plans and Projects

5.1 Cumulative Impacts

Potential sources of cumulative impacts were identified based on the ecology of valued ecological features. Potential sources of cumulative impacts were sought within ranges, territories or catchments where there is the potential for a significant impact on identified ecological features.

The following Plans and Projects were identified as potential sources of cumulative impacts:

- South Dublin County Council Development Plan 2016 - 2022
- Greater Dublin Drainage (GDD)
- River Basin Management Plan for Ireland 2018-2021
- Planning Applications (compiled from myplan.ie)

5.1.1 South Dublin County Council Development Plan 2016 - 2022

The South Dublin County Council (SDCC) Development Plan sets out an overall strategy for the proper planning and sustainable development of the County. The objectives include a target of increased population and continuing the consolidation of established urban areas, support and facilitate economic activity, promote the ease of movement by sustainable modes (walking, cycling and public transport). The Plan also aims to protect and enhance surface water quality, to support, improve and protect Natura 2000 sites, and to develop an integrated Green Infrastructure network to enhance biodiversity, provide accessible parks, open spaces and recreational facilities (SDCC, 2016a).

The plan also states that work will be in conjunction with Irish Water to protect existing water and drainage infrastructure, to promote investments aiming to support environmental protection and facilitate the sustainable growth of the county (SDCC, 2016a).

A Screening for Appropriate Assessment was carried out on the plan. This concluded that there are no likely significant direct, indirect or secondary impacts of the project on any Natura 2000 sites (SDCC, 2016b).

5.1.2 Greater Dublin Drainage Strategy 2005

The Greater Dublin Drainage Strategy sets out the strategic planning for the development of waste water treatment in the Greater Dublin area in relation to the Ringsend WWTP Upgrade, Greater Dublin Drainage Project and associated wastewater network drainage projects (Irish Water, 2018). The Ringsend WWTP Upgrade includes plans to expand the WWTP to its ultimate capacity, together with associated network upgrades required. The Greater Dublin Drainage Project is planned to relieve both the Ringsend WWTP and network loading by construction of a new WWTP at Clonshaugh, an orbital sewer and provision of an outfall pipe discharging 1km north east of Ireland's Eye.

The Ringsend WWTP upgrade is in progress and carried out in stages, with an increased capacity of 400,000 PE by Q1 2021 and the ultimate capacity of 2.4 million PE to be in operation by 2024 (Irish Water, 2018).

The Greater Dublin Drainage Project is strategically important to the Dublin Region in that it will provide capacity for residential and commercial growth (Irish Water, 2018).

5.1.3 River Basin Management Plan for Ireland 2018-2021 (RBMP, 2018)

The River Basin Management Plan (RBMP) for Ireland 2018-2021 sets out the actions that Ireland will take to improve water quality and achieve 'good' ecological status in water bodies (rivers, lakes, estuaries and coastal waters) by 2021 (DoHPLG, 2018a). Changes from previous River Basin Management Plans is that all River Basin Districts are merged as one national River Basin District. The Plan provides a more coordinated framework for improving the quality of our waters — to protect public health, the environment, water amenities and to sustain water-intensive industries, including agri-food and tourism, particularly in rural Ireland.

The first cycle of River Basin Management Plans included the Eastern River Basin District - River Basin Management Plan (ERBDMP) 2009 – 2015 (WFD (2010). The plans summarised the waterbodies that may not meet the environmental objectives of the WFD by 2015 and identified which pressures are contributing to the environmental objectives not being achieved. The plans described the classification

results and identified measures that can be introduced in order to safeguard waters and meet the environmental objectives of the WFD;

- Prevent deterioration of water body status.
- Restore good status to water bodies.
- Achieve protected areas objectives.
- Reduce chemical pollution of water bodies

The ERBD Management Plan (2009-2015) and the River Basin Management Plan for Ireland (2018-2021) aim to improve the management and water quality of the Eastern RBD. Preparation of the 2nd Cycle RBMPs 2018-2021 is now underway.

5.1.4 Other Projects

Other projects dated back three years are included overleaf (Table 5-1), which are not retention applications, home extensions and/or internal alterations, have been granted planning permission in the locality (approx. 2km) of the proposed site.

Table 5-1: Projects granted planning permission since February 2018 in vicinity of proposed site.

Planning Reference	Address	Application Status	Decision date	Summary of development
SD18A/0310	Ardeevin Avenue, Lucan, Co. Dublin	Grant Permission	15/05/2019	Construction of a 25 unit residential housing development on a site extending to 0.96 hectares to the north of the N4 Lucan by-pass and to the east (end of) Ardeevin Avenue, consisting of the following: 1 detached, two and a half storey 5 bedroom house (Type 1, 295sq.m); 1 detached, two and half storey 5 bedroom house (Type 1a, 270sq.m); 1 detached, two and a half storey 4 bedroom house (Type 1b, 270sq.m); 1 detached, two and a half storey 5 bedroom house (Type 1c, 280sq.m); 1 detached, two and a half storey 5 bedroom house (Type 1d, 270sq.m); 8 detached, two and a half storey houses (Type 2, 150sq.m each); a two storey, semi-detached block consisting of: 1 two bedroom house (Type 3, 70sq.m); 1 two bedroom house (Type 3a, 74sq.m), 10 semi-detached two and a half storey houses (Type 4, 150sq.m each); all associated site development works including landscaping works, public lighting, ground works, (reduction of existing site level), boundary treatment, roads, footpaths, foul drainage, surface water drainage including attenuation, water main and site entrance piers (with no gates).
SDZ20A/0005	Tobermaclugg Development Area, within Adamstown SDZ, Lucan, Co. Dublin.	Grant Permission	17/04/2020	Provision of a new public park, called 'Tobermaclugg Park' of approximately 3.4 Ha comprising of site development and landscape works. The proposed park will incorporate pedestrian pathways, maintenance access and routes, seating zones, areas for play and planting and all ancillary boundary treatments and entrances (to Tubber Lane Road, to Hallwell Residential Development, to the Airlie Heights public open space, to the Shackleton Residential Development and to Shackleton Drive), planting, necessary regrading works and realignment of portion of existing Tobermaclugg Stream; a total of six visitor car parking spaces are also proposed, located to the eastern boundary of the site along Shackleton Park.
SDZ18A/0002	Tobermaclugg Development Area, within Adamstown SDZ, Lucan, Co. Dublin.	Grant Permission	15/03/2018	Permission for development of 268 dwellings comprising of the following: 184 two and three storey houses consisting of 102 three-bedroom houses (ranging from 111sq.m to 157sq.m), 67 four-bedroom houses (ranging from 135sq.m to 154sq.m) and 15 five bedroom houses (ranging from 169sq.m to 176sq.m) with associated private gardens, car parking and bin storage areas, in a mix of detached, semi-detached and terraced units; Block 1 (931sq.m gross floor area): four storey L-shaped terraced block consisting of 8 duplex units comprising 4 two bedroom duplex units (ranging from 93sq.m to 100sq.m) and 4 three bedroom duplex units (ranging from 107sq.m to 111sq.m); Block 2 (1032sq.m gross floor area): three storey terraced block consisting of 12 duplex/apartment units comprising 6 own door two bedroom apartments at ground floor (ranging from 88sq.m to 91sq.m) and 6 three bedroom duplexes over (ranging from 118sq.m to 120sq.m); Block 3 (1192sq.m gross floor area): three storey terraced block consisting of 14 duplex/apartment units comprising 7 own door two bedroom apartments at ground floor (ranging from 81sq.m to 89sq.m) and 7 three bedroom duplexes over (ranging from 113sq.m to 118sq.m); Block 4, 5 and 6 (488sq.m each): four storey block consisting of 4 duplex units comprising 2 two bedroom duplex units (101sq.m) and 2 three bedroom duplex units (117sq.m) and Block 7 (4110sq.m gross floor area): four storey block consisting of 38 apartment units comprising 8 one bedroom units (54sq.m) and 30 two-bedroom units (ranging from 82sq.m to 90sq.m). Block 7 includes a crèche (652sq.m) and associated play areas. Access will be provided from 3 access points from the approved east-west distributor road that bounds the site to the north ('Shackleton Drive'). The current application includes an additional section of Shackleton Drive (c.200 metres) that is within the applicants' ownership and will make provision for vehicular traffic, online bus services, car parking, pedestrian footpaths and cycle paths to tie in with the approved Shackleton Drive permitted under SDZ16A/0003. (Note: This section of road was previously permitted under Reg Ref: SDZ17A/0006 to facilitate access to lands in Development Area 5 Tubber Lane). The development also

Planning Reference	Address	Application Status	Decision date	Summary of development
				includes part (c.450metres) of the north-south road (referred to as 'Central Boulevard' in the Planning Scheme) that will replace Tandy's Lane along the eastern boundary of the site. This road will make provision for vehicular traffic, bus lanes/stops, pedestrian footpaths, cycle paths and 2 access points into the current application site. Permission is also sought for 552 parking spaces, bin storage areas, communal and private open spaces (including balconies, terraces, gardens, courtyards and roof terraces), hard and soft landscaping, boundary treatment and all associated site and development works. One dwelling and associated outbuilding (totalling 94sq.m) located to the south eastern corner of the site, at the bend of Tandy's Lane are to be demolished to accommodate the development. Temporary permission for 3 years is sought for two 4.5m high triangular pylon marketing signs to be erected in the north eastern and south eastern corner of the site addressing 'Shackleton Drive'/Central Boulevard and Central Boulevard respectively. At this site (c.8.85 hectares) at Adamstown, Lucan Co. Dublin. The application relates to part of the lands within Adamstown SDZ Planning Scheme (2014) known as Tobermaclugg Village (Development Area 4) bounded to the north by approved east-west distributor road (approved under Reg Ref: SDZ16A/0003 - under construction) to the south by the proposed Airlie Park Public Open Space, to the east by a new road referred to as Central Boulevard and to the west by undeveloped lands designated in the Planning Scheme as Tobermaclugg Local Centre.
SDZ18A/0014	Adamstown, Lucan, Co. Dublin	Grant Permission	12/02/2019	Provision of new public park, called Airlie Park of approximately 10.95Ha, comprising of a full size all-weather playing pitch (c.135 x 90m), together with 6 18m high columns, each with 4 flood light fittings and 3m high double wire ball-stop sports fencing surrounding the proposed all-weather playing pitch, together with 16m high ball-catch fencing behind the two goal areas; a full size cricket ground (c.140 x 158m); 2 cricket practice areas, including 3.6m high netting enclosing the cricket practice areas; 2 basketball courts, together with 6 10m high columns with between 2 and 4 flood light fittings on each column and 3m high double wire ball-stop sports fencing surrounding the proposed basketball courts; a half basketball court; 2 tennis courts, together with 6 10m high columns with between 2 and 4 flood light fittings on each column and 3m high double wire ball-stop sports fencing surrounding the proposed tennis courts; 1 storey building with changing facilities, equipment storage and a coffee dock (c.322sq.m.); 2 natural play / neighbourhood play areas (NEAPs); 2 natural play / local play areas (LEAPs); an exercising area; teenager's social area; car park with 56 car parking spaces served by two new vehicular entry / egress points off Adamstown Boulevard (permitted under ref. SDZ18A/0009; 70 bicycle parking spaces; redistribution and re-profiling of c.179,000 cubic metres of soil spoil from drainage, services and foundations from within the Adamstown Strategic Development Zone; demolition of existing single storey house called Airlie Lodge (c.110sq.m.) and a detached single storey house at the former Airlie Farm (c.125sq.m.) and collection of ancillary farm buildings at the former Airlie Farm (3,210sq.m.); all ancillary site development and landscaping works, including public lighting, seating, pathways, planting, surface water drainage and boundaries and location for park maintenance facility including a 2m high feature park entrance detail to the eastern site boundary inside planned car park; part of the subject site is within the curtilage of Airlie House (Protected Structure) at Airlie Lodge and former Airlie Farm, both at Tandy's Lane, Lucan and including other lands east and west of Tandy's Lane, in the townlands of Finnstown, Aderrig and Doddsborough at Adamstown which are bounded generally to the north by Tobermaclugg Village development area and the Shackleton Phase 2 residential development (ref. SDZ18A/0002), to the east by the alignment of the permitted Adamstown Boulevard (ref. SDZ18A/0009), to the south by the undeveloped lands in the Aderrig Development Area; no works are proposed to the Protected Structure.
SDZ17A/0006	Tubber Lane,	Grant	17/07/2018	176 residential units including 329 car parking spaces and all site development works including the

Planning Reference	Address	Application Status	Decision date	Summary of development
-> SDZ18A/0005 (amendments)	Adamstown, Lucan, Co. Dublin.	Permission		development of new internal roads and footpaths, site access, pedestrian and cyclists facilities, public open space with a total area of 0.31 hectares, landscaping, foul and surface water drainage and boundary walls and fences. Private and semi-private open space to serve the proposed units will be provided in the form of balconies, patios and gardens. The development will also comprise of a new section of Adamstown Drive Road (approximately 180 metres in length) which will provide access to serve the residential development. The new proposed road section will extend from a section of Adamstown Drive permitted under Reg Ref No: SDZ16A/0003 which connects to Dodsboro Road/Tandy's Lane in the east. The new section of Adamstown Drive will make provision for vehicular traffic, bus services, on street parking and separated cycle track and footpaths. The site will be accessed via an access point in the south of the application site off Adamstown Drive. The development consists of 122 houses (semi-detached, terraced and town) and 54 apartments (Block E and F), to be provide as follows: (i) 20 4-bed, semi-detached houses, 133sq.m GFA (Type A); (ii) 23 4-bed, 3 storey town houses, 154sq.m GFA (Type B); (iii) 39 3-bed terraced houses, 116sq.m GFA (Type C); (iv) 40 3-bed terraced houses, 114sq.m GFA (Type D); (v) Apartment Block E containing 18 apartments including 4 1-bed apartments, 10 2-bed apartments and 4 3-bed apartments (123-140); (vi) Apartment Block F containing 36 apartments including 9 1-bed apartments, 26 2-bed apartments and 1 3-bed apartments (141-176) all on a site located to the southeast of Tubber Lane Road and in the northeast of the Adamstown SDZ lands. This application relates to development within the Adamstown Strategic Development Zone (SDZ) and is subject to the Adamstown Planning Scheme 2014. This development has a total site area of 4.72 hectares and is located entirely within the boundary of Adamstown Strategic Development Zone.

5.2 Summary of Cumulative Impacts

Following the desktop assessment of the potential adverse impacts from the relevant plans and projects identified above; adverse cumulative or in-combination impacts on the valued ecological features in the context of this proposed parking development are not anticipated given the proximity, scale and nature of these plans and projects / developments.

6 Impact Assessment

6.1 Introduction

The impacts on the valued ecological features are assessed here. The initial assessment considers the potential impact pathways and whether these apply to the ecological features. The impact assessment considers the project and the anticipated effects in the absence of any mitigation.

The potential impacts from the maintenance works and the site's operation following the works are assessed under the following:

- Disturbance to habitats and species
- Habitat loss
- Impacts on water quality

The following sections describes the nature of immediate / short-term impacts, as well as any medium- or long-term impacts, predicted for designated protected sites, habitats and species in the absence of implemented mitigation measures during the maintenance works.

6.2 Do Nothing Scenario

If the proposed works were not to go ahead and the present land management continues as is, the ecological value of the site would remain.

6.3 Designated Sites, Habitats & Species

6.3.1 Liffey Valley pNHA; Eroding / upland rivers (Lucan Stream); Otter; Common Frog; European Eel; River Lamprey; and Atlantic Salmon

For the eroding / upland river habitat (Lucan Stream); and Liffey Valley pNHA (River Liffey), the main impact concerns would be that of an accidental introduction of pollutants (hydrocarbon leakages from site machinery) and excess sediment from the excavations and soil works. These inputs would lead to the degradation of the River Griffeen and the protected aquatic and riverine species that it supports, notably Otter; Common Frog; European Eel; River Lamprey; and Atlantic Salmon. Therefore, in the absence of surface water-based mitigation, during the construction phase, minor adverse impacts on the eroding / upland river habitat and Liffey Valley pNHA are anticipated, while moderate impacts are anticipated for Otter; European Eel, River Lamprey; and Atlantic Salmon. Negligible adverse impacts are anticipated for Common Frog.

These ecological features (habitat and semi-/aquatic species) may also experience similar polluting impacts through groundwater-to-surface water pollution. The bedrock underlying the proposed site is comprised of dark-grey to black, fine-grained, occasionally cherty, micritic limestones that weather paler, usually to pale grey. There are also rare dark coarser grained calcarenitic limestones, sometimes graded, and interbedded dark-grey calcar. This bedrock is overlain with gravelly alluvium soil, with low subsoil permeability characteristics. As result of the above characteristics the site's aquifer vulnerability status is rated as 'High'. The aquifer within the underlying bedrock is considered to be locally important, with moderate productivity, though only in local zones. Therefore, the aquifer has a limited and relatively poorly connected network of fractures, fissures and joints, giving a low fissure permeability which tends to decrease further with depth. Generally, the lack of connection between the limited fissures results in relatively poor aquifer storage and flow paths that may only extend a few hundred metres (GSI, 2021).

The characteristics of the underlying aquifer means it is likely to rapidly discharge to the nearby watercourses, i.e. the Lucan Stream or River Liffey, within the short flow paths present in the local bedrock (GSI, 2021). Therefore, there is the potential for groundwater to surface water impacts for the Lucan Stream and River Liffey; and the protected species they host. Therefore, in the absence of groundwater-based mitigation, during the construction phase, minor adverse impacts on the eroding / upland river habitat and Liffey Valley pNHA are anticipated, while moderate impacts are anticipated for Otter; European Eel, River Lamprey; and Atlantic Salmon. Negligible adverse impacts are anticipated for Common Frog.

Operational impacts through the surface water pathway are not anticipated given the suitably detailed drainage design options outlined Section 2.1.1.

6.3.2 Dry meadows and grassy verges

The dry meadow habitat at Site A will experience permanent habitat loss during construction and operational phases as a result of the parking development. The area to be lost will be a narrow strip that runs parallel to the existing treeline and wall, so the habitat will not be fragmented but simply reduced in size; and ecological functionality of the habitat will persist in operational phase of the development.

Additionally, this habitat is anticipated to potentially experience habitat degradation through surface water based polluting substances during the construction phase of the development. Therefore, in the absence of mitigation there will be a medium impact on this ecological feature during the construction and operational phases.

6.3.3 Treelines

The Silver Birch treeline, with an understorey of Beech hedging will be removed as part of the clearance works for Site A. However, this direct loss of habitat will be temporary in nature, as a new treeline with accompanying understorey vegetation will be planted along the new pedestrian / green area boundary, following the completion of construction works. Therefore, there will be a temporary medium impact on this ecological feature. At Site B impacts may occur through compaction of soil on-site containing the tree root systems, degrading the overall health of these treelines.

Operational impacts from the parking development on this habitat are not anticipated.

6.3.4 Scrub

The scrub habitat located adjacent to Site A is anticipated to potentially experience habitat degradation through surface water based polluting substances during the construction phase of the development. Therefore, in the absence of mitigation there will be a minor impact on this ecological feature during the construction phase.

Operational impacts from the parking development on this habitat are not anticipated.

6.3.5 Badger; Irish Hare; and Hedgehog

While no signs of Badger, Irish Hare, and Hedgehog habitation were present during the ecological walkover, this does not ensure that the local mammal species do not occasionally visit the site area for foraging. Bearing this in mind, impacts may arise in the form of disturbance to foraging and commuting activities, as well as potential loss of life to individuals in the case of the accidents within the construction site (e.g. accidental trappings), after failure to exclude entry.

Operational impacts from the parking development on these species are not anticipated.

6.3.6 Bats

The four / three bat species that are confirmed to be using the Site A / B are likely only utilising it for commuting and opportunistic foraging.

The proposed development is not anticipated to have an adverse impact on population numbers of the bat species identified as using the site, as there will be no reduction in potential roosting locations due to the proposed development. The site has moderate foraging and commuting habitat suitability for bats. However, potential impact on individuals using the site could be posed by external lighting during construction. The potential resulting impact is described in the section below.

Impacts during construction will be temporary and given the presence of woodland and treelines outside of sites A and B, i.e. alternative commuting and foraging habitats for bats, temporary impacts are not anticipated to be significant. However, lighting used incorrectly could also impact on surrounding habitats.

Operational impacts from the parking development on these bat species are not anticipated.

6.3.7 Breeding birds

Local breeding bird species will potentially be physically disturbed from their foraging activities during the construction works. This adverse, low-level, temporary impact on a locally important ecological feature will have an overall negligible impact. Though, in the absence of mitigation, the removal of trees potentially containing nests during breeding season would increase the impact, elevating the overall impact to minor. Therefore, mitigation will be prescribed to avoid this scenario.

Operational impacts from the development on these species are not anticipated.

6.4 Invasive Non-native Species

While Cherry Laurel is present just south of the Site B boundary, the invasive species continued presence within this area is not thought to adversely impact on ecological features within and adjacent to Site B.

6.5 Cumulative Impacts

None of the potential cumulative or in-combination plans and projects requiring planning (Section 5) will result in any adverse impacts on the any of the valued ecological features identified in this report.

6.6 Summary

The following potential significant impacts have been identified and possible mitigation is discussed in the next chapter:

- Pollution of the Liffey Valley pNHA; eroding / upland river (Lucan Stream) habitat and protected species they host (i.e. for Otter; Common Frog; European Eel; River Lamprey; and Atlantic Salmon).
- Permanent small-scale loss of dry meadows habitat at Site A.
- Temporary loss of treeline habitat at Site A.
- Disturbance of commuting and foraging terrestrial mammals and bats, as well as potentially accidental fatal entrapment for terrestrial mammals.
- Disturbance of commuting, foraging and nesting for local breeding birds of conservation concern (i.e. Wood Pigeon).

The mitigation is based on that proposed in existing documentation and where necessary additional mitigation is proposed to reduce the impacts identified above.

.

7 Mitigation

The following mitigation is recommended to ensure that the proposed works do not adversely impact on the ecological receptors outlined in Section 5.

Mitigation measures for anticipated impacts on designated sites and ecological features are outlined below.

7.1 Mitigation for Project Construction Phase

The activities of the project for the construction phase shall remain within the boundary of the proposed site. Within this area, the mitigation measures outlined below shall be implemented.

- A Construction and Environment Management Plan (CEMP) will be submitted to South Dublin County Council for agreement prior to site works commencing. This CEMP will incorporate the mitigation measures listed here.
- The CEMP will also strictly adhere to best practice environmental guidance including but not limited to the following:

  - CIRIA Guidance C532 Control of water pollution from construction sites. Guidance for consultants and contractors. (CIRIA, 2019 - www.ciria.org);

  - CIRIA Guidance C741: *Environmental good practice on site guide* (Charles & Edwards, 2015; CIRIA, 2019 - www.ciria.org);

  - CIRIA Guidance C750D: *Groundwater control: design and practice* (Preene *et al.*, 2016; CIRIA, 2019 - www.ciria.org);

  - Inland Fisheries Ireland (2016) *Guidance on Protection of Fisheries During Construction Works In and Adjacent to Waters;*

  - Inland Fisheries Ireland (2020) Planning for Watercourses in the Urban Environment. A Guide to the Protection of Watercourses through the use of Buffer Zones, Sustainable Drainage Systems, Instream Rehabilitation, Climate / Flood Risk and Recreational Planning
- Construction method statements will be submitted to South Dublin County Council for agreement prior to site works commencing.

7.1.1 Site Compound

- The site compound shall be located within the site boundary.
- Only plant and materials necessary for the construction of the works will be permitted to be stored at the compound location.
- No parking of machinery within tree root protection zones.
- Site establishment by the Contractor will include the following:

  - Site offices;

  - Site facilities;

  - Secure compound for the storage of all on-site machinery and materials;

  - Temporary fencing for mammal exclusion and tree root protection zones;

  - Bunded storage of fuels and refuelling area. Bunds shall be 110% capacity of the largest vessel contained within the bunded area.

  - A separate container will be located in the Contractors compound to store absorbents used to contain spillages of hazardous materials. The container will be clearly labelled, and the contents of the container will be disposed of by a licenced waste contractor at a licenced site. Records will be maintained of material taken off site for disposal.

  - A maintenance programme for the bunded areas will be managed by the site environmental manager. The removal of rainwater from the bunded areas will be their responsibility. Records will be maintained of materials taken off site for disposal.

  - The site environmental manger will be responsible for maintaining all training records.

  - The contents of any tank will be clearly marked on the tank, and a notice displayed requiring that valves and trigger guns be locked when not in use.

- Drainage collection system for washing area to prevent run-off into surface water system.

- All refuelling of vehicles will be carried out at the fuel stores within the main site compound and only ADR trained personnel will be permitted to operate fuel bowsers.

7.1.2 Water Quality

Relevant legislation and best practice guidance that have been considered includes but not limited to the following:

- CIRIA C532 Control of water pollution from construction sites. Guidance for consultants and contractors (CIRIA, 2020 - www.ciria.org)
- CIRIA C515 Groundwater control – design and practice, 2nd ed. (CIRIA, 2020 - www.ciria.org)
- CIRIA Guidance C741: *Environmental good practice on site guide* (Charles & Edwards, 2015; CIRIA, 2020 - www.ciria.org)
- Inland Fisheries Ireland (2016) *Guidance on Protection of Fisheries During Construction Works In and Adjacent to Waters*
- Inland Fisheries Ireland (2020) Planning for Watercourses in the Urban Environment. A Guide to the Protection of Watercourses through the use of Buffer Zones, Sustainable Drainage Systems, Instream Rehabilitation, Climate / Flood Risk and Recreational Planning
- Adoption of a surface water / groundwater plan including appropriate barrier controls to prevent any seepage of potentially polluted surface water from the site into the groundwater table below (e.g. geotextile barriers).
- Oil booms and oil soakage pads should be maintained on-site to enable a rapid and effective response to any accidental spillage or discharge. These shall be disposed of correctly and records will be maintained by the environmental manager of the used booms and pads taken off site for disposal.
- Fail-safe site drainage and bunding through drip trays on plant and machinery will be provided to prevent discharge of chemical spillage from the sites to surface water.
- Adoption of a surface water plan including appropriate erosion and silt controls (e.g. trenches, silt fences between the site and the Lucan Stream), when performing excavations on-site in order to prevent any uncontrolled flow of surface water (with high sediment loading) from the site into the Lucan Stream.

7.1.3 Pollution Control and Spill Prevention

Spill kits containing absorbent pads, granules and booms will be stored in the site compound with easy access for delivery to site in the case of an emergency. A minimum stock of spill kits will be maintained at all times and site foremen's vehicles will carry large spill kits at all times. Absorbent material will be used with pumps and generators at all times and used material disposed of in accordance with a Waste Management Plan that will be prepared prior to commencement of works. All used spill materials e.g. Absorbent pads will be placed in a bunded container in the contractor's compound. The material will be disposed of by a licenced waste contractor at a licenced facility. Records will be maintained by the environmental site manager.

Regular inspections and maintenance of plant and machinery checking for leaks, damage or vandalism will be made on all plant and equipment.

In the event of a spill the Contractor will ensure that the following procedure are in place:

- Emergency response awareness training for all Project personnel on-site works.
- Appropriate and sufficient spill control materials will be installed at strategic locations within the site. Spills kits for immediate use will be kept in the cab of mobile equipment.
- Spill kits will be stored in the site compound with easy access for delivery to site in the case of an emergency. A minimum stock of spill kits will be maintained at all times and site vehicles will carry spill kits at all times. Spill kits must include suitable spill control materials to deal with the type of spillage that may occur and where it may occur. Typical contents of an on-site spill kit will include the following as a minimum;
- Absorbent granules;
- Absorbent mats/cushions;

- Absorbent booms
- Spill kits will contain gloves to handle contaminated materials and sealable disposal sacks.
- Track-mats, geotextile material and drain covers.
- All potentially polluting substances such as oils and chemicals used during construction will be stored in containers clearly labelled and stored with suitable precautionary measures such as bunding within the site compound.
- All tank and drum storage areas on the site will, as a minimum, be bunded to a volume not less than the following;
- 110% of the capacity of the largest tank or drum within the bunded area, or
- 25% of the total volume of substances which could be stored within the bunded area.
- The site compound fuel storage areas and cleaning areas will be rendered impervious and will be constructed to ensure no discharges will cause pollution to surface or ground waters.
- Designated locations for refuelling are within Site Compound.
- Potentially contaminated run off from plant and machinery maintenance areas will be managed within the site compound surface water collection system.
- Damaged or leaking containers will be removed from use and replaced immediately

7.1.4 Mitigation for Removal and Trimming of Treelines

The removal of vegetation and trimming of limbs from the treeline habitats are to be conducted outside of the breeding bird season (March – September inclusive). If this is not possible, a breeding bird survey by an appropriately qualified ecologist will be undertaken in advance of the works to ensure that there will be no impacts on nesting birds. If nests are found, they will be safeguarded, with an appropriate buffer, until the chicks have successfully fledged.

7.1.5 General Avoidance Measures

Although it has been identified that there will be no permanent impact through disturbance to wildlife during the work, it is advised that general avoidance measures be undertaken to protect wildlife while the works are being carried out.

General avoidance measures that should be incorporated by the contractors working on site include:

- Limit the hours of working to daylight hours, to limit disturbance to nocturnal and crepuscular animals;
- Due to the potential presence of Otter; Badger; Irish Hare; Hedgehog; and bat species, the use of lighting at night should be avoided. If the use of lighting is essential, then a directional cowl should be fitted to all lights to prevent light spill and to be directed away from all treelines / wooded areas.
- Contractors must ensure that no harm comes to wildlife by maintaining the site efficiently and clearing away materials which are not in use, such as wire or bags in which animals can become entangled; and
- Any pipes should be capped when not in use (especially at night) to prevent animals becoming trapped. Any excavations should be covered overnight to prevent animals from falling and getting trapped. If that is not possible, a strategically placed plank should be placed to allow animals to escape.

7.2 Mitigation for Operation Phase

7.2.1 Vegetation Replanting

The replanting of the treeline habitat, with accompanying shrub understorey at site A is the only mitigation necessary for the operational phase of the project. The replanting ensures the continuity of this treeline habitat, limiting the adverse impacts experienced by this ecological feature to be temporary. The species planted should mirror the original tree (Silver Birch) and shrub (Beech hedging) species in the habitat or be replaced by similar native species.

8 Residual Impact

Residual ecological impacts are those that remain once the development proposals have been implemented. The main aim of ecological mitigation, compensation and enhancement is to minimise or eliminate residual impacts.

8.1 Construction Phase

Preparatory and construction works will result in disturbance to the foraging and commuting habitat for protected species such as terrestrial mammals, bats, breeding birds, and amphibians.

Implementation of mitigation measures during the construction phase, along with good site management and construction practices will help to minimise any significant and/or permanent impact on the environment. This will be included in a Construction Environmental Management Plan (CEMP). Included in this will be best practice measures for control of surface and groundwater, which will minimise any significant impact on the surface water and groundwater systems and the species reliant on them.

With the proposed mitigation implemented the residual impact during the construction phase is assessed to be of temporary negative impact on account of the disturbance to habitats of local and county level ecological importance, as well as the local protected species.

8.2 Operational Phase

The proposed mitigation of replanting of lost treeline habitat during operational phase should act to ensure continuity of existing habitats for all species and will have a neutral residual impact that will be positive in time following the maturation of the treeline habitat and its understorey. However, the permanent loss of a section of dry meadow habitat, though still ecologically functional, increases the overall residual impact of Site A from neutral to negligible. Site B will have an overall neutral residual impact, given that operational phase will not impact on any of ecological features of value.

9 Summary of Impact Assessment

9.1 EcIA Table

Table 9-1 presents a summary of the impacts envisaged when mitigation approaches are included. Residual impacts are also described.

All other ecological impacts can be avoided, mitigated or compensated so there is no anticipated significant impact for the remaining species considered in the assessment.

Table 9-1: Summary of Impacts; Mitigations; and Significance of Residual Impacts on ecological features

Ecological Features	Impacts	Importance of Feature	Significance of impact without Mitigation	Mitigation	Significance of Residual Impacts
Liffey Valley pNHA	Reduction in water quality (habitat) as a result of polluting inputs, namely hydrocarbons and excess sediments.	National	Low impact: Minor significance	Strict adherence to: Best practice guidance / mitigation measures listed in Sections 7.1.1, 7.1.2, 7.1.3, and 7.1.5 pertaining to the protection of surface water and groundwater; and the habitats and species reliant on them; as well as general disturbance of nocturnal animals, i.e. Otter and Common Frog.	Neutral significance
Eroding / upland rivers (Lucan Stream)		County	Low impact: Minor significance		Neutral significance
Otter		International	Low impact: Moderate significance		Neutral significance
Common Frog		High Local	Negligible impact: Negligible significance		Neutral significance
European Eel		International	Low impact: Moderate significance		Neutral significance
River Lamprey		International	Low impact: Moderate significance		Neutral significance
Atlantic Salmon		International	Low impact: Moderate significance		Neutral significance
Dry meadows and grassy verges	Habitat loss at Site A. Degradation from pollution from surface water run-off at Site A.	High Local	Medium impact: Minor significance	Strict adherence to: Best practice guidance / mitigation measures listed in Sections 7.1.1, 7.1.2, and 7.1.3, pertaining to the protection of surface water and groundwater; and the habitats reliant on them.	Negligible significance

Ecological Features	Impacts	Importance of Feature	Significance of impact without Mitigation	Mitigation	Significance of Residual Impacts
Treelines	Habitat loss at Site A. Root compaction at Site B.	High Local	Site A- Medium impact: Minor significance Site B - Low impact: Negligible significance	Strict adherence to: Best practice guidance / mitigation measures listed in Sections 7.1.1, 7.1.2, and 7.1.3, pertaining to the protection of surface water and groundwater; and the habitats reliant on them; as well as protection of tree root zones The replanting vegetation mitigation outlined in Section 7.2.1, ensures the continuity of treeline habitat and existing wildlife corridors	Site A: Minor significance during construction and then neutral during operation given the replating of the treeline habitat. Site B: Neutral significance
Scrub	Degradation from pollution from surface water run-off at Site A.	Low Local	Negligible impact: Neutral significance	Best practice guidance / mitigation measures listed in Sections 7.1.1, 7.1.2, and 7.1.3, pertaining to the protection of surface water and groundwater; and the habitats and species reliant on them.	Neutral significance
Badger	Disturbance to foraging, denning and commuting activities within the vicinity of the site. Potential loss of life through accidental entrapment in construction setting.	County	Low impact: Minor significance	Strict adherence to: Best practice guidance / mitigation measures listed in Sections 7.1.1, 7.1.2, 7.1.3, and 7.1.5 pertaining to the protection of surface water and groundwater; and the habitats and species reliant on them; general disturbance of nocturnal animals, i.e. Badger and Hedgehog. The replanting vegetation mitigation outlined in Section 7.2.1, ensures the continuity of existing wildlife	Negligible significance during construction and then neutral during operation given the replating of the treeline habitat.
Irish Hare and Hedgehog		High Local	Low impact: Negligible significance		Negligible significance during construction and then neutral during operation given the replating of the treeline habitat.

Ecological Features	Impacts	Importance of Feature	Significance of impact without Mitigation	Mitigation	Significance of Residual Impacts
Bats	Disturbance to foraging and commuting activities within the vicinity of the site.	International	Low impact: Moderate significance	corridors for these species.	Negligible significance during construction and then neutral during operation given the replating of the treeline habitat.
Breeding birds	Disturbance to foraging, nesting and commuting activities within the vicinity of the site.	High Local	Low impact: Negligible significance	Strict adherence to: The mitigations outlined in Section 7.1.4 pertaining to the timing of vegetation clearance and trimming, to avoid impacts on breeding birds. The replanting vegetation mitigation outlined in Section 7.2.1, ensures the continuity of existing wildlife corridors for these species.	Negligible significance during construction and then neutral during operation given the replating of the treeline habitat.

10 Conclusion

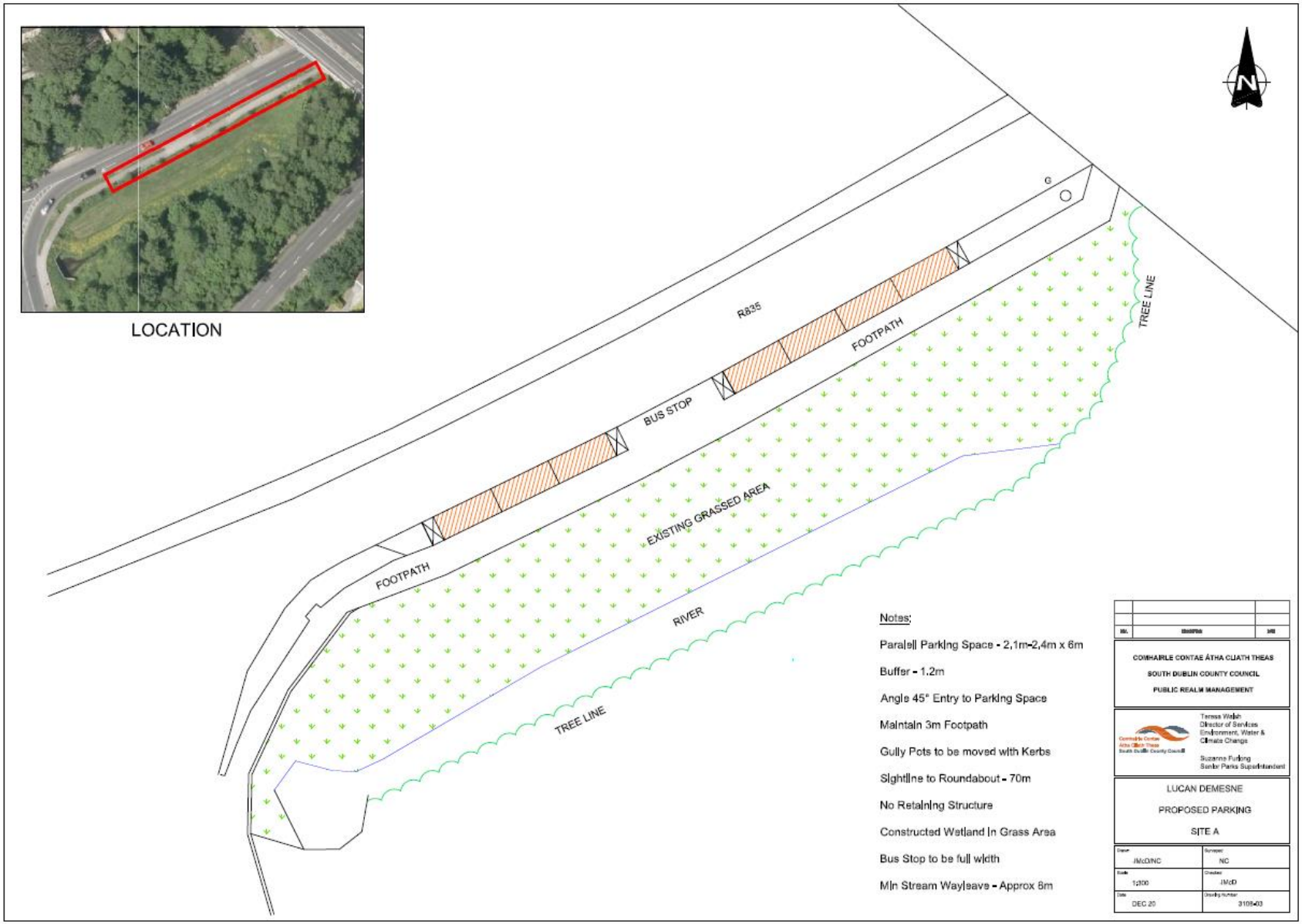
The construction and operation of this proposed parking development has been shown to potentially impact a number of different habitats with county (eroding / upland rivers - Lucan Stream) and local importance (dry meadows, treelines, scrub) and faunal groups (Otter; Badger; Irish Hare; Hedgehog; Irish Hare; Bats; Breeding birds; Common Frog; European Eel; River Lamprey; and Atlantic Salmon), who's ecological importance ranges from local to international.

Based upon the information supplied, regarding the site layout and drainage; and provided that the parking development is constructed in accordance with the mitigation measures outlined above, there will be no significant impact in-combination with other projects and plans, as result of the development and associated works on the ecology and local species of the area and in particular on the following designated conservation sites:

- Rye Water Valley/Carton SAC [001398]
- North Dublin Bay SAC [000206]
- South Dublin Bay SAC [000210]
- North Bull Island SPA [004006]
- South Dublin Bay and River Tolka Estuary SPA [004024]
- Grand Canal pNHA [002104]
- Liffey Valley pNHA [000128]
- Rye Water Valley / Carton pNHA [001398]
- Royal Canal pNHA [002103]

Appendices

A Site A Layout Plan



FGJ-JBAI-XX-XX-RP-BD-0002-S3-P02-SDCC_Lucan_Demesne_Parking_EclA

B Site B Layout Plan

FGJ-JBAI-XX-XX-RP-BD-0002-S3-P02-SDCC_Lucan_Demesne_Parking_EclA

C Relevant Policy and Legislation

The legislation discussed below is intended as a guide only and does not replace formal legal advice.

C.1 Biodiversity Policy Guidance

'Biodiversity: The National Biodiversity Action Plan 2017-2021 (DCHG, 2017) sets out actions through which a range of government, civil and private sectors will undertake to achieve Ireland's 'Vision for Biodiversity' and has been developed in response to The Earth Summit, held in Rio de Janeiro in 1992 (UN Convention on Biological Diversity) and subsequent EU and International Biodiversity strategies and policies.

As part of the Action Plan process Local Authorities (LA) must produce Biodiversity Action Plans (BAP). BAPs highlight local biodiversity issues and set out a series of objectives and action plans for the conservation of priority species and habitats where they occur in each district or county.

C.2 Designated Sites and Nature Conservation

C.2.1 Statutory Designated Nature Conservation Sites

Sites with statutory designations receive varying degrees of legal protection under Irish statute (i.e. Wildlife Act 1976 and Wildlife (Amendment) Act (2000) and European Directives (i.e. the EC Birds Directive (2009/147/EC) and EC Habitats Directive (92/43/EC). The EU directives were transposed into Irish national law and subsequent amendments were revised and consolidated in the European Communities (Birds and Natural Habitats) Regulations 2011 and Irish Statutory Instrument 477/2011

There are a number of statutory designations used for sites of high nature conservation value in Ireland, which are applied depending upon the importance of the site in a local, regional, national or international context. These include:

- National
- Natural Heritage Area (NHA)
- Wildfowl Sanctuary
- Statutory Nature Reserve
- Refuge for Fauna
- European
- Special Protection Area (SPA)
- Special Area of Conservation (SAC)
- International
- UNESCO Biosphere Reserve
- Ramsar Convention Site
- National Park (Category II) Sites

C.2.2 Non-Statutory Designations

Non-statutory sites are afforded no statutory legal protection, but are normally recognised by local planning authorities and statutory agencies as being of local nature conservation value

A proposed Natural Heritage Area (pNHA) is an area deemed to be of special interest containing important wildlife habitat and often containing rare or threatened species. They may also be selected on the basis of their geology or geomorphology.

C.2.3 Protected and Notable Species

A number of species are protected under Irish and international legislation. In Ireland, primary protection is provided under the 1976 Wildlife Act and Wildlife (Amendment) Acts (2000 & 2010) and revision 2018. Species of European importance receive additional protection in Ireland under the Birds and Natural habitats Regulations 2011.

The Flora (Protection) Order (2015) makes it illegal to cut, uproot or damage a listed species in any way. It is illegal to alter, damage or interfere in any way with their habitats.

D National Biodiversity Data Centre (2021); IFI (2015)

D.1 Recent records (within 10 years) of protected species within the ZoI

Common Name	Latin Name	Designation	Record Date
Mammals			
Eurasian Otter	*Lutra lutra*	EU Habitats Directive >> Annex II & IV Wildlife Act 1976 & Amendments	15/05/2016
European Badger	*Meles meles*	Wildlife Act 1976 & Amendments	15/06/2018
European Hedgehog	*Erinaceus europaeus*	Wildlife Act 1976 & Amendments	28/10/2016
Pine Marten	*Martes martes*	EU Habitats Directive >> Annex V Wildlife Act 1976 & Amendments	31/12/2011
Irish Stoat	*Mustela erminea subsp. hibernica*	Wildlife Act 1976 & Amendments	12/06/2018
Red Deer	*Cervus elaphus*	Wildlife Act 1976 & Amendments	29/05/2018
Pygmy Shrew	*Sorex minutus*	Wildlife Act 1976 & Amendments)	03/10/2015
Daubenton's Bat	*Myotis daubentonii*	EU Habitats Directive >> Annex IV Wildlife Act 1976 & Amendments	02/09/2014
Brown Long-eared Bat	*Plecotus auritus*	EU Habitats Directive >> Annex IV Wildlife Act 1976 & Amendments	28/04/2011
Leisler's Bat	*Nyctalus leisleri*	EU Habitats Directive >> Annex IV Wildlife Act 1976 & Amendments	08/08/2014
Common Pipistrelle	*Pipistrellus pipistrellus*	EU Habitats Directive >> Annex IV Wildlife Act 1976 & Amendments	06/06/2013
Soprano Pipistrelle	*Pipistrellus pygmaeus*	EU Habitats Directive >> Annex IV Wildlife Act 1976 & Amendments	19/08/2013
Irish Hare	*Lepus timidus subsp. hibernicus*	EU Habitats Directive >> Annex V Wildlife Act 1976 & Amendments	17/08/2016
Red Squirrel	*Sciurus vulgaris*	Wildlife Act 1976 & Amendments	21/04/2017
Birds			
Yellowhammer	*Emberiza citrinella*	Birds of Conservation Concern in Ireland: Red List	31/12/2011
Whooper Swan	*Cygnus cygnus*	EU Birds Directive >> Annex I Birds of Conservation Concern in Ireland: Amber List	31/12/2011
Skylark	*Alauda arvensis*	EU Birds Directive >> Annex II Birds of Conservation Concern in Ireland: Amber List	05/07/2016
Snipe	*Gallinago gallinago*	EU Birds Directive >> Annex II & III Birds of Conservation Concern in Ireland: Amber List	31/12/2011
Jack Snipe	*Lymnocryptes minimus*	EU Birds Directive >> Annex II & III Birds of Conservation Concern in Ireland: Amber List	31/12/2011
Merlin	*Falco columbarius*	EU Birds Directive >> Annex I Birds of Conservation Concern in Ireland: Amber List	31/12/2011
Red Kite	*Milvus milvus*	Birds of Conservation Concern in Ireland: Amber List	02/09/2016
Rock Pigeon	*Columba livia*	EU Birds Directive >> Annex II	31/12/2011
Lapwing	*Vanellus vanellus*	EU Birds Directive >> Annex II	31/12/2011

Common Name	Latin Name	Designation	Record Date
		Birds of Conservation Concern in Ireland: Red List	
Kestrel	*Falco tinnunculus*	Birds of Conservation Concern in Ireland: Amber List	31/12/2011
Redshank	*Tringa totanus*	Birds of Conservation Concern in Ireland: Red List	31/12/2011
Little Egret	*Egretta garzetta*	EU Birds Directive >> Annex I	12/10/2017
Golden Plover	*Pluvalis apricaria*	EU Birds Directive >> Annex I, II & III Birds of Conservation Concern in Ireland: Red List	31/12/2011
Coot	*Fulica atra*	EU Birds Directive >> Annex II & III Birds of Conservation Concern in Ireland: Amber List	31/12/2011
Barn Owl	*Tyto alba*	Birds of Conservation Concern in Ireland: Red List	31/12/2011
Kingfisher	*Alcedo atthis*	EU Birds Directive >> Annex I Birds of Conservation Concern in Ireland: Amber List	31/03/2014
Little Grebe	*Tachybaptus ruficollis*	Birds of Conservation Concern in Ireland: Amber List	31/12/2011
Mallard	*Anas platyrhynchos*	EU Birds Directive >> Annex II & III	13/03/2016
Pheasant	*Phasianus colchicus*	EU Birds Directive >> Annex II & III	27/06/2014
Linnet	*Linaria cannabina*	Birds of Conservation Concern in Ireland: Amber List	31/12/2011
Pochard	*Aythya ferina*	EU Birds Directive >> Annex II & III Birds of Conservation Concern in Ireland: Red List	31/12/2011
Eurasian Teal	*Anas crecca*	EU Birds Directive >> Annex II & III Birds of Conservation Concern in Ireland: Amber List	31/12/2011
Starling	*Sturnus vulgaris*	Birds of Conservation Concern in Ireland: Amber List	16/09/2017
Herring Gull	*Larus argentatus*	Birds of Conservation Concern in Ireland: Red List	31/12/2011
Mute Swan	*Cygnus olor*	Birds of Conservation Concern in Ireland: Amber List	31/12/2011
Black-headed Gull	*Chroicocephalus ridibundus*	Birds of Conservation Concern in Ireland: Red List	31/12/2011
Northern Pintail	*Anas acuta*	EU Birds Directive >> Annex II & III Birds of Conservation Concern in Ireland: Red List	31/12/2011
Tufted Duck	*Aythya fuligula*	EU Birds Directive >> Annex II & III Birds of Conservation Concern in Ireland: Red List	31/12/2011
Eurasian Woodcock	*Scolopax rusticola*	EU Birds Directive >> Annex II & III Birds of Conservation Concern in Ireland: Amber List	31/12/2011
Robin	*Erithacus rubecula*	Birds of Conservation Concern in Ireland: Amber List	31/12/2011
Barn Swallow	*Hirundo rustica*	Birds of Conservation Concern in Ireland: Amber List	16/09/2017
Goldeneye	*Bucephala clangula*	EU Birds Directive >> Annex II Birds of Conservation Concern in	31/12/2011

Common Name	Latin Name	Designation	Record Date
		Ireland: Red List	
Common Sandpiper	*Actitis hypoleucos*	Birds of Conservation Concern in Ireland: Amber List	31/12/2011
Common Swift	*Apus apus*	Birds of Conservation Concern in Ireland: Amber List	31/12/2011
Tree Sparrow	*Passer montanus*	Birds of Conservation Concern in Ireland: Amber List	31/12/2011
House Sparrow	*Passer domesticus*	Birds of Conservation Concern in Ireland: Amber List	31/12/2011
House Martin	*Delichon urbicum*	Birds of Conservation Concern in Ireland: Amber List	31/12/2011
Greylag Goose	*Anser anser*	EU Birds Directive >> Annex II & III Birds of Conservation Concern in Ireland: Amber List	31/12/2011
Common Gull	*Larus canus*	Birds of Conservation Concern in Ireland: Amber List	31/12/2011
Northern Wheatear	*Oenanthe oenanthe*	Birds of Conservation Concern in Ireland: Amber List	31/12/2011
Sand Martin	*Riparia riparia*	Birds of Conservation Concern in Ireland: Amber List	31/12/2011
Spotted Flycatcher	*Muscicapa striata*	Birds of Conservation Concern in Ireland: Amber List	31/12/2011
Stock Pigeon	*Columba oenas*	Birds of Conservation Concern in Ireland: Amber List	31/12/2011
Peregrine Falcon	*Falco peregrinus*	EU Birds Directive >> Annex I, II & III	16/09/2017
Eurasian Wigeon	*Anas penelope*	EU Birds Directive >> Annex II & III Birds of Conservation Concern in Ireland: Red List	31/12/2011
Gadwall	*Anas strepera*	EU Birds Directive >> Annex II Birds of Conservation Concern in Ireland: Amber List	31/12/2011
Great Black-backed Gull	*Larus marinus*	Birds of Conservation Concern in Ireland: Amber List	31/12/2011
Great Cormorant	*Phalacrocorax carbo*	Birds of Conservation Concern in Ireland: Amber List	16/10/2012
Great Crested Grebe	*Podiceps cristatus*	Birds of Conservation Concern in Ireland: Amber List	31/12/2011
Lesser Black-backed Gull	*Larus fuscus*	Birds of Conservation Concern in Ireland: Amber List	31/12/2011
Red Grouse	*Lagopus lagopus*	EU Birds Directive >> Annex II & III Birds of Conservation Concern in Ireland: Red List	31/12/2011
Goosander	*Mergus merganser*	EU Birds Directive >> Annex II Birds of Conservation Concern in Ireland: Amber List	31/12/2011
Amphibians			
Common Frog	*Rana temporaria*	EU Habitats Directive >> Annex V Wildlife Act 1976 & Amendments	04/03/2020
Smooth Newt	*Lissotriton vulgaris*	Protected Species: Wildlife Acts	22/04/2018
Fish			
European Eel	*Anguilla anguilla*	OSPAR Convention Red Status: Critically Endangered	(IFI, 2015)

Common Name	Latin Name	Designation	Record Date
River Lamprey	*Lampetra fluviatilis*	EU Habitats Directive: Annex II & V	(IFI, 2015)
Atlantic Salmon	*Salmo salar*	OSPAR Convention Red Status: Vulnerable EU Habitats Directive: Annex II & V	(IFI, 2015)
Terrestrial Invertebrates			
Large Red-Tailed Bumble Bee	*Bombus (Melanobombus) lapidarius*	Irish Red List: Near Threatened	14/08/2020
Moss Carder-bee	*Bombus (Thoracombus) muscorum*	Irish Red List: Near Threatened	25/07/2018
Field Cuckoo Bee	*Bombus (Psithyrus) campestris*	Irish Red List: Vulnerable	20/07/2018
Desmoulin's Whorl Snail	*Vertigo (Vertigo) moulinsiana*	EU Habitats Directive >> Annex II Irish Red List: Endangered	04/11/2006 (Current QI)
Narrow-mouthed Whorl Snail	*(Vertigo (Vertilla) angustior*	EU Habitats Directive >> Annex II Irish Red List: Vulnerable	04/11/2006 (Current QI)
Aquatic Invertebrates			
White-clawed Crayfish	*Austropotamobius pallipes*	EU Habitats Directive> Annex II & V Wildlife Act 1976 & Amendments	02/09/2016
Flora			
Green Figwort	*Scrophularia umbrosa*	Threatened Species: Endangered	22/07/2020
Hairy St John's-wort	*Hypericum hirsutum*	Threatened Species: Endangered	11/06/2020
Cornflower	*Centaurea cyanus*	Threatened Species: Regionally Extinct	26/08/2020
Archangel	*Lamiastrum galeobdolon subsp. montanum*	Threatened Species: Vulnerable	08/04/2019
Hook-beak Tufa-moss	*Hymenostylium recurvirostrum*	Threatened Species: Near threatened	23/02/2012

E Habitat Map

FGJ-JBAI-XX-XX-RP-BD-0002-S3-P02-SDCC_Lucan_Demesne_Parking_EclA

References

Charles, P., Edwards, P. (Eds.), 2015. Environmental Good Practice on Site Guide, Fourth edition. ed, CIRIA C, CIRIA: London.

CIEEM, 2018. 'Guidelines For Ecological Impact Assessment in the UK and Ireland - Terrestrial, Freshwater, Coastal and Marine'.

DoHPLG, 2018. 'River Basin Management Plan for Ireland 2018-2021'. Available online at: https://www.housing.gov.ie/sites/default/files/publications/files/rbmp_report_english_web_version_final_0.pdf

EPA, 2021a. EPA Catchments.ie [online], Catchments.ie, Available online at: https://www.catchments.ie/maps/

EPA, 2021b. EPA Maps [online], Next Generation EPA Maps, Available online at: https://gis.epa.ie/EPAMaps/

EPA, 2017. Guidelines on the Information to Be Contained in Environmental Impact Assessment Reports DRAFT, Environmental Protection Agency. Available: http://www.epa.ie/pubs/advice/ea/EPA%20EIAR%20Guidelines.pdf

Fossitt, J.A., 2000. A Guide to Habitats in Ireland, Heritage Council of Ireland series, Heritage Council/Chomhairle Oidhreachta: Kilkenny.

Greater Dublin Drainage Strategy, 2005. Greater Dublin Strategic Drainage Study - Final Strategy Report. Available online at: http://www.greaterdublindrainage.com/wp-content/uploads/2011/11/GDSDS-Final-Strategy-Report-April-051.pdf

GSI, 2021. Geological Survey Ireland Spatial Resources: Map Viewer. Geological Survey Ireland. Available online at: https://dcenr.maps.arcgis.com/apps/MapSeries/index.html?appid=a30af518e87a4c0ab2fbde2aaac3c228

IFI, 2015 - Kelly, F.L., Connor, L., Matson, R., Feeney, R., Morrissey, E., Coyne, J. and Rocks, K., 2015. Sampling Fish for the Water Framework Directive - Summary Report 2014. Inland Fisheries Ireland, Citywest Business Campus, Dublin 24, Ireland. Available online at: http://wfdfish.ie/wp-content/uploads/2010/05/WFD_Report_2014_FINAL.pdf

JBA, 2021. Leixlip Rd Parking Development - Appropriate Assessment Screening Report. JBA Consulting Ireland

Matson, R., Delanty, K., Gordon, P., O'Briain, R., Garland, D., Cierpal, D., Connor, L., Corcoran, W., Coyne, J., McLoone, P., Morrisey-McCaffrey, E., Brett, T., Ní Dhonnabhain, L. and Kelly, F.L., (2018) Sampling Fish in Rivers 2017 – Dodder, Factsheet No. 7. National Research Survey Programme. Inland Fisheries Ireland.

NBDC, 2021. Biodiversity Maps - Map Viewer [online], National Biodiversity Data Centre Biodiversity Maps. Available: http://maps.biodiversityireland.ie/#/Map

NPWS, 2009a. Site Synopsis: Slade Of Saggart And Crookling Glen pNHA [000211]. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS, 2009b. Site Synopsis: Grand Canal pNHA [002104]. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS, 2009c. Site Synopsis: Lugmore Glen pNHA [001212]. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS, 2009d. Site Synopsis: Kilteel Wood pNHA [001394]. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS, 2009e. Site Synopsis: Liffey Valley pNHA [000128]. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS, 2009f. Site Synopsis: Dodder Valley pNHA [000991]. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS, 2009g. Site Synopsis: Royal Canal pNHA [002103]. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS, 2013a. Conservation Objectives: North Dublin Bay SAC [000206]. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht. Available online at: https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000206.pdf

NPWS, 2013b. Conservation Objectives: South Dublin Bay SAC [000210]. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht. Available online at: https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000210.pdf

NPWS, 2015a. Conservation Objectives: North Bull Island SPA [004006]. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht. Available online at: https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004006.pdf

NPWS, 2015b. Conservation Objectives: South Dublin Bay and River Tolka Estuary SPA [004024]. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht. Available online at: https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004024.pdf

NPWS, 2017. Natura 2000 - Standard Data Form for Wicklow Mountains SAC [002122]. Department of Culture, Heritage and the Gaeltacht. Available online at: https://www.npws.ie/sites/default/files/protected-sites/natura2000/NF002122.pdf

NPWS, 2018a. Natura 2000 - Standard Data Form for Glenasmole Valley SAC [001209]. Department of Culture, Heritage and the Gaeltacht. Available online at: https://www.npws.ie/sites/default/files/protected-sites/natura2000/NF001209.pdf

NPWS, 2018b. Natura 2000 - Standard Data Form for Wicklow Mountains SAC [002122]. Department of Culture, Heritage and the Gaeltacht. Available online at: https://www.npws.ie/sites/default/files/protected-sites/natura2000/NF002122.pdf

NPWS, 2018c. Natura 2000 - Standard Data Form for Poulaphouca Reservoir SPA [004063]. Department of Culture, Heritage and the Gaeltacht. Available online at: https://www.npws.ie/sites/default/files/protected-sites/natura2000/NF004063.pdf

NPWS, 2018d. Natura 2000 - Standard Data Form for Wicklow Mountains SPA [004040]. Department of Culture, Heritage and the Gaeltacht. Available online at: https://www.npws.ie/sites/default/files/protected-sites/natura2000/NF004040.pdf

NPWS, 2018e. Natura 2000 - Standard Data Form for North Dublin Bay SAC [000206]. Department of Culture, Heritage and the Gaeltacht. Available online at: https://www.npws.ie/sites/default/files/protected-sites/natura2000/NF000206.pdf

NPWS, 2018f. Natura 2000 - Standard Data Form for South Dublin Bay SAC [000210]. Department of Culture, Heritage and the Gaeltacht. Available online at: https://www.npws.ie/sites/default/files/protected-sites/natura2000/NF000210.pdf

NPWS, 2018g. Natura 2000 - Standard Data Form for North Bull Island SPA [004006]. Department of Culture, Heritage and the Gaeltacht. Available online at: https://www.npws.ie/sites/default/files/protected-sites/natura2000/NF004006.pdf

NPWS, 2018h. Natura 2000 - Standard Data Form for South Dublin Bay and River Tolka Estuary SPA [004024]. Department of Culture, Heritage and the Gaeltacht. Available online at: https://www.npws.ie/sites/default/files/protected-sites/natura2000/NF004024.pdf

NPWS, 2019a. Natura 2000 - Standard Data Form for Rye Water Valley / Carton SAC [001398]. Department of Culture, Heritage and the Gaeltacht. Available online at: https://www.npws.ie/sites/default/files/protected-sites/natura2000/NF001398.pdf

NPWS, 2019b. Natura 2000 - Standard Data Form for Red Bog, Kildare SAC [000397]. Department of Culture, Heritage and the Gaeltacht. Available online at: https://www.npws.ie/sites/default/files/protected-sites/natura2000/NF000397.pdf

NPWS, 2019c. Conservation objectives for Red Bog, Kildare SAC [000397]. Generic Version 6.0. Department of Culture, Heritage and the Gaeltacht. Available online at: https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000397.pdf

NPWS, 2020a. Conservation objectives for Rye Water Valley/Carton SAC [001398]. Generic Version 7.0. Department of Culture, Heritage and the Gaeltacht. Available online at: https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO001398.pdf

NPWS, 2020b. Natura 2000 - Standard Data Form for Glenasmole Valley SAC [001209]. Department of Culture, Heritage and the Gaeltacht. Available online at: https://www.npws.ie/sites/default/files/protected-sites/natura2000/NF001209.pdf

NPWS, 2020c. Conservation objectives for Poulaphouca Reservoir SPA [004063]. Generic Version 6.0. Department of Culture, Heritage and the Gaeltacht. Available online at: https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004063.pdf

NPWS, 2020d. Conservation objectives for Wicklow Mountains SPA [004040]. Generic Version 6.0. Department of Culture, Heritage and the Gaeltacht. Available online at: https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004040.pdf

NRA, 2009. Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes, National Roads Authority, available: http://www.tii.ie/technical-services/environment/planning/Ecological-Surveying-Techniques-for-Protected-Flora-and-Fauna-during-the-Planning-of-National-Road-Schemes.pdf

Parnell, J. & Curtis, T., 2012. Webb's An Irish Flora [online], 8th ed, Trinity College Dublin. Available: http://www.corkuniversitypress.com/product-p/9781859184783.htm.

SDCC, 2016a. 'South Dublin County Council Development Plan 2016-2022'. Available online at: https://www.southdublindevplan.ie/sites/default/files/documents/CDP%202016-2022%20(lower%20res).pdf

SDCC, 2016b. Screening for Appropriate Assessment South Dublin County Council Development Plan 2016-2022. Available online at: https://www.southdublindevplan.ie/sites/default/files/documents/AA%20Screening%20Report%20for%20SDCC%20Development%20Plan%202016-2022%20June%202016.pdf

Smith, G.F., O'Donoghue, P., O'Hora, K., Delaney, E., 2011. 'Best practice guidance for habitat survey and mapping', The Heritage Council: Ireland

JBA consulting

Offices at
Dublin
Limerick

Registered Office
24 Grove Island
Corbally
Limerick
Ireland

t: +353 (0) 61 345463
e:info@jbaconsulting.ie

JBA Consulting Engineers and Scientists Limited
Registration number 444752

JBA Group Ltd is certified to:
ISO 9001:2015
ISO 14001:2015
OHSAS 18001:2007

Visit our website
www.jbaconsulting.ie