Brownsbarn Site, Citywest, Co. Dublin

Ecological Impact Assessment

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Contract

This report describes work commissioned by Neill McGarry, on behalf of Exeter Property IV B Ireland Limited, by an email dated 06/11/2020. William Mulville of JBA Consulting carried out this work.

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Purpose

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Abbreviations

AA	Appropriate Assessment
BoCCI	Birds of Conservation Concern in Ireland
CIEEM	Chartered Institute of Ecology and Environmental Management
CIRIA	Construction Industry Research and Information Association
EcIA	Ecological Impact Assessment
EPA	Environmental Protection Agency
EU	European Union
GIS	Geographic Information Systems
INNS	Invasive Non-Native Species
NBDC	National Biodiversity Data Centre
NPWS	National Parks and Wildlife Services
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
ZoI	Zone of Influence

1 Introduction

JBA Consulting Ireland Ltd. has been commissioned by Exeter Property IV B Ireland Limited to undertake an Ecological Impact Assessment (EcIA) in relation to a proposed warehouse development at Brownsbarn, Citywest, 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 / biodiversity enhancement

1.2 The Existing Site

The proposed development will be located in south-west Brownsbarn area, with the N7 running along the site's southern boundary (Figure 1-1). The N82 is located to the east of the site, providing access to the site. A tributary of the River Camac flows along the western boundary of the site.

Figure 1-1: Site Location

2 Project Description

2.1 The 'Project'

Exeter Ireland Property IV B Limited intend to apply for permission for development at this 4.04 Ha site at Brownsbarn, Citywest Campus, Dublin 24. The lands are bounded to the south by the N7 Naas Road, to the north and west by the National Distribution Centre and to the east by Brownsbarn Drive and the Royal Garter Stables, a Protected Structure (RPS Ref. 261).

The development will comprise the construction of 2 No. warehouses with ancillary office and staff facilities and associated development as follows: Unit 1 will have a maximum height of 16.35 metres with a gross floor area of 7,742 sq m including a warehouse area (6,983 sq m), ancillary office areas (362 sq m) and staff facilities (397 sq m); and Unit 2 will have a maximum height of 15.35 metres with a gross floor area of 6,163 sq m including a warehouse area (5,148 sq m), ancillary office areas (562 sq m) and staff facilities (453 sq m).

The development will also include: vehicular access/egress routes to the subject site via the existing roundabout and access road; plus alteration to the existing access arrangements to the subject lands to facilitate safe traffic flow to/from the proposed facilities; pedestrian access; 112 No. car parking spaces; bicycle parking; HGV Parking; HGV yards; level access goods doors; dock levellers; access gates; signage; hard and soft landscaping; lighting; boundary treatments; ESB substation; sprinkler tanks; pump houses; and all associated site development works above and below ground.

The Site Layout Plan is available to view in Appendix A.

2.1.1 Site Drainage

The development described in the previous section will include a drainage system comprising a series of SurfSep silt traps (or similar approved), Klargester Class 1 Petrol Interceptors (or similar approved) and Stormtech attenuation systems (MC3500). This drainage system will efficiently treat surface water run-off before it enters the Camac tributary along the western border of the site.

The foul water system will be connected to the existing infrastructure within the Brownsbarn area, which is ultimately served by the Ringsend WWTP. The Site Drainage Plan is available to view in Appendix B.

2.1.2 Site Landscape Masterplan and Lighting Plan

The proposed development includes a highly detail Landscape Masterplan, including a species planting plan, as well as a site Lighting Plan. These are displayed in Appendix C and D.

2.1.3 Construction Schedule

The duration of the proposed development's construction phase is approximately 18 months.

2.1.4 Excavation requirements

Construction phase excavation depths will average at 1.5m depth, with the maximum depth of approx. 2m at the location of foundation pads.

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, and protected and priority species relevant to the proposed project is provided in Appendix E.

3 3 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., 2011b).

3 4 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. This AA Screening Report was submitted at planning application stage. 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.

3.5 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.

3.6 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.

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

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

Level of Value	Examples of Criteria
	Directive: *Species protected under the Wildlife Acts; and/or *Species listed on the relevant Red Data List. Sites containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or populations of species that are uncommon in the locality Sites or features containing common or lower value habitats, including naturalised species that are nevertheless essential in maintaining links and ecological corridors between features of higher ecological value
Local Importance (lower value)	Sites containing small areas of semi-natural habitat that are of some local importance for wildlife: Sites or features containing non-native species that are of some importance in maintaining habitat links

3.6.1 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.
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.

3.6.2 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

3.6.3 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.

3.7 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).

The following reports were consulted during this process:

- 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 – 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 7 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 (10km), surface water (15km + downstream hydrological connections), groundwater (15km) and any supporting habitat for SAC/SPA species (20km).

3 7 2 Field Surveys

A general ecological site walkover, including habitat mapping, mammal and preliminary bat roost surveys were conducted on the 10/02/2021 by William Mulville of JBA Consulting to inform the initial ecological baseline of the site. Bat activity surveys (transect and static deployment) were carried out by JBA Ecologists Malin Lundberg and Mark Desmond on the 15/09/2021. Additionally, a White-clawed Crayfish survey was conducted within the watercourse on-site by JBA Ecologists William Mulville and Patricia Byrne on 27/10/2021.

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 Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edition). Bat Conservation Trust (Collins, 2016)
- 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);
- 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.).
- A technical manual for monitoring white-clawed crayfish *Austropotamobius pallipes* in Irish lakes (Reynolds et al., 2010)
- Monitoring of white-clawed crayfish *Austropotamobius pallipes* in Irish lakes in 2007 (O'Connor et al., 2009)
- Monitoring the White-clawed Crayfish *Austropotamobius pallipes* (Peay, 2003)

3.8 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 the subsequent Sub-Sections 3.8.1, 3.8.2, 3.8.3 and 3.8.4.

3.8.1 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).

3.8.2 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).

3.8.3 River Basin Management Plan for Ireland 2018-2021

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.

3 8 4 Other Projects

Other projects dated back three years are included overleaf (Table 3-5), which are not retention applications, home extensions and/or internal alterations, and have been granted planning permission in the locality (approx. 2km) of the proposed site

Table 3-5: Projects granted planning permission since February 2018 in vicinity of proposed site

Planning Reference	Address	Application Status	Decision date	Summary of development
SD18A/0266	Moneenalion Commons Upper, Baldonnel Business Park, Dublin 22	Grant Permission	17/09/2018	Amendments to the permitted logistics/warehousing scheme under SDCC Ref: SD15A/0309 (An Bord Pleanála Ref. PL06S.246392), as subsequently amended by SDCC Ref. SD17A/0362. The proposed amendments relate primarily to permitted Unit B and Unit C and consist of: (1) Omission of Unit C and provision of enlarged Unit B (increasing from 10,967sq.m GFA to 18,617sq.m GFA) with a height of c. 17.65m including mezzanine level. The previously permitted Units A, B and C resulted in a total of 32,771sq.m. The proposed units A and B result in a total of 29,454sq.m. which results in an overall reduction of 3.317sq.m. GFA. (2) The proposed Unit B incorporates 690sq.m GFA of ancillary office space (a reduction of 386sq.m compared to the combined permitted ancillary office space within permitted Unit B and C). (3) Omission of one vehicular entrance and associated bridge between permitted Unit B and C and replacement with two vehicular entrances and associated bridges to either side of proposed Unit B. (4) Relocation substation. (5) Reduction in car parking spaces from 329 to 235; 54 bicycle parking spaces are proposed to service Unit B. (6) Resultant amendments to site layout, yards, elevations, signage, internal road layout, landscaping, ground works, drainage, gates, fencing, services and utilities and all associated and ancillary site development works.
SD19A/0370	Moneenalion Commons Upper, Brownsbarn and Collegeland, Baldonnell Business Park, Dublin 22	Grant Permission	29/01/2020	Construction of two logistics/warehouse units (Unit C & D) southwest of Mountpark Baldonnell Phase 1 and west of the older original Business Park. Unit C will comprise of a GIA 11,492sq.m (including 592sq.m of associated office space); Unit D will comprise of a GIA 7,856sq.m (including 400sq.m of associated office space); provide for 193 car parking spaces and 56 bicycle spaces to serve the proposed development; flood mitigation works to store and attenuate flood flows from the River Camac; formation of plateaus on the site with surplus excavated material to allow for future development; access to the site will be from the existing Phase 1 development located on Clonlara Road; all ancillary landscaping, internal roads, associated infrastructure and site development works to support the development; the site is primarily greenfield and located between Casement Aerodrome and the N7 national route; the proposal will form a second phase of Development to that permitted under SD15A/0309 (ABP Ref. PL06S.246392) as amended by permissions SD17A/0362, SD18A/0266 and SD19A/0048; An Environmental Impact Assessment Report (EIAR) is submitted with the planning application.
SD18A/0314	Kingswood Business Park, Baldonnel, Dublin 22	Grant Permission	16/09/2019	Warehousing unit incorporating ancillary offices/staff facilities on 3 floors to the front (south) elevation, office/staff facilities for the warehouse use at the rear (north) elevation and plant room, totalling 14,104sq.m gross internal area, which comprises: (1) 12,240sq.m warehousing area (17.9m high); (2) 1,674sq.m front ancillary office/staff facilities area on 3 floors (12.45m high); (3) 122sq.m office/staff facilities attached to the rear of the warehouse (8.4m high), 63sq.m plant room attached to the eastern side of the warehouse (5.7m high). The development also includes: (A) On-site security hut 16sq.m (3.00m high) at the HGV access/egress location; (B) 4,160sq.m solar panels placed on the warehouse roof; (C) Site access; (D) Ancillary car parking (145 spaces); (E) HGV marshalling yard on 16,380sq.m of yard and HGV parking for 49 vehicles; (F) Dock levellers and level access doors; (G) Canopy over level access doors attached to western elevation and canopy over dock levellers at the rear; (H) Perimeter landscaping; (I) Drainage works including underground surface water attenuation facility, flood management measures, foul sewer pumping and storage tank; (J) All services and utilities and (K) All associated site development works.
SHD3ABP-305267-19	Lands at Kilcarbery, Corkagh Demesne,	Grant Permission	05/12/2019	1034 residential units comprising of (578 houses: 449 3-bed & 129 4-bed), 456 apartments: 142 1-bed, 224 2-bed, 90 3-bed), 2 childcare facilities (1 temporary, 1 permanent), 1 retail unit, 1 community facility and all associated site works.

	Clondalkin, Dublin 22			
SD18A/0420	Fortunestown Lane, Saggart, Co. Dublin	Grant Permission	30/01/2019	Amendments to the permitted residential development (Reg. Ref. ABP-300555-18) arising from Condition 2 and will consist of: (a) development of a crèche and community facility (271sq.m) with associated external play area and car parking in lieu of duplex units A-01 and A-02 within Block A and all associated amendments to the permitted site layout plan, hard and soft landscaping and adjoining street; (b) revised boundary treatments to the permitted dwelling units to comprise Type 1, 2m high brick walls to the side of the dwelling units; Type 2, 1.8m high vertical timber fencing to the rear and side boundaries of the rear gardens and Type 3, 1.8m high brick gossip wall to the front of the dwelling units; the proposed amendments will result in a reduction in the total number of units on the site from 526 to 524 dwellings; all associated site and development works on c.23.9ha site at Fortunestown Lane and Garter Lane (lands generally bounded by the Luas Red Line, Saggart Luas stop and Fortunestown Lane to the south, Garter Lane to the west, Bianconi Avenue to the north and Citywest Business Park, Citywest TLC Nursing Home and the Cuil Duin residential development to the east).
SD20A/0204	Baldonnell Business Park, Baldonnell, Dublin 22	Grant Permission	05/10/2020	Provision of a warehouse unit with ancillary office and staff facilities and associated development. The building will have a maximum height of 15.8m with a gross floor area of 2,222sq.m including a warehouse area (1,530sq.m), staff facilities (302sq.m) and ancillary office area (390sq.m) and will also include the provision of 1 new vehicular access/egress point along the north-west boundary of the subject site onto Clonlara Road; pedestrian access; 22 ancillary car parking spaces; bicycle parking; HGV marshalling yard with 2 loading bays; level access goods doors; dock levellers; access gate; signage; hard and soft landscaping; lighting; boundary treatments and associated site development works above and below ground.

3.9 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 site visits were carried out during the February 2021 period and the data does not reflect the whole ecology of the site throughout the year. Floral species identification was limited given the timing of the ecological walkover survey was outside of the growing season.
- The precautionary principle is used at all times when determining potential ecological sensitivity of the site.

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 10/02/2021, 15/09/2021 and 27/10/2021.

4.1 Desk-based Assessment

4.1.1 Designated Sites

This section lists the designated sites of International and National importance. The Zone of Influence (ZoI) for this project is a general 15km radius and any downstream hydrological connection (including transitional waters buffer) for statutory sites; and a general 10km radius for non-statutory sites. Figure 4-1 below 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 4-1 below lists these designated sites with their respective importance and distance from the proposed site development. 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	8.4km
Glenasmole Valley [001209]	SAC	International	5.6km
Red Bog, Kildare [000397]	SAC	International	12.5km
Wicklow Mountains [002122]	SAC	International	7.1km
Poulaphouca Reservoir [004063]	SPA	International	12.9km
Wicklow Mountains [004040]	SPA	International	10.4km
North Dublin Bay [000206]	SAC	International	18.2km
South Dublin Bay [000210]	SAC	International	15.2km
North Bull Island [004006]	SPA	International	18.2km
South Dublin Bay and River Tolka Estuary [004024]	SPA	International	15.2km
Slade Of Saggart And Crookling Glen [000211]	pNHA	National	3.2km
Grand Canal [002104]	pNHA	National	3.8km
Lugmore Glen [001212]	pNHA	National	2.9km
Kilteel Wood [001394]	pNHA	National	8.8km
Glenasmole Valley [001209]	pNHA	National	5.6km
Liffey Valley [000128]	pNHA	National	6.9km
Dodder Valley [000991]	pNHA	National	5.3km
Rye Water Valley / Carton [001398]	pNHA	National	8.4km
Royal Canal [002103]	pNHA	National	8.6km

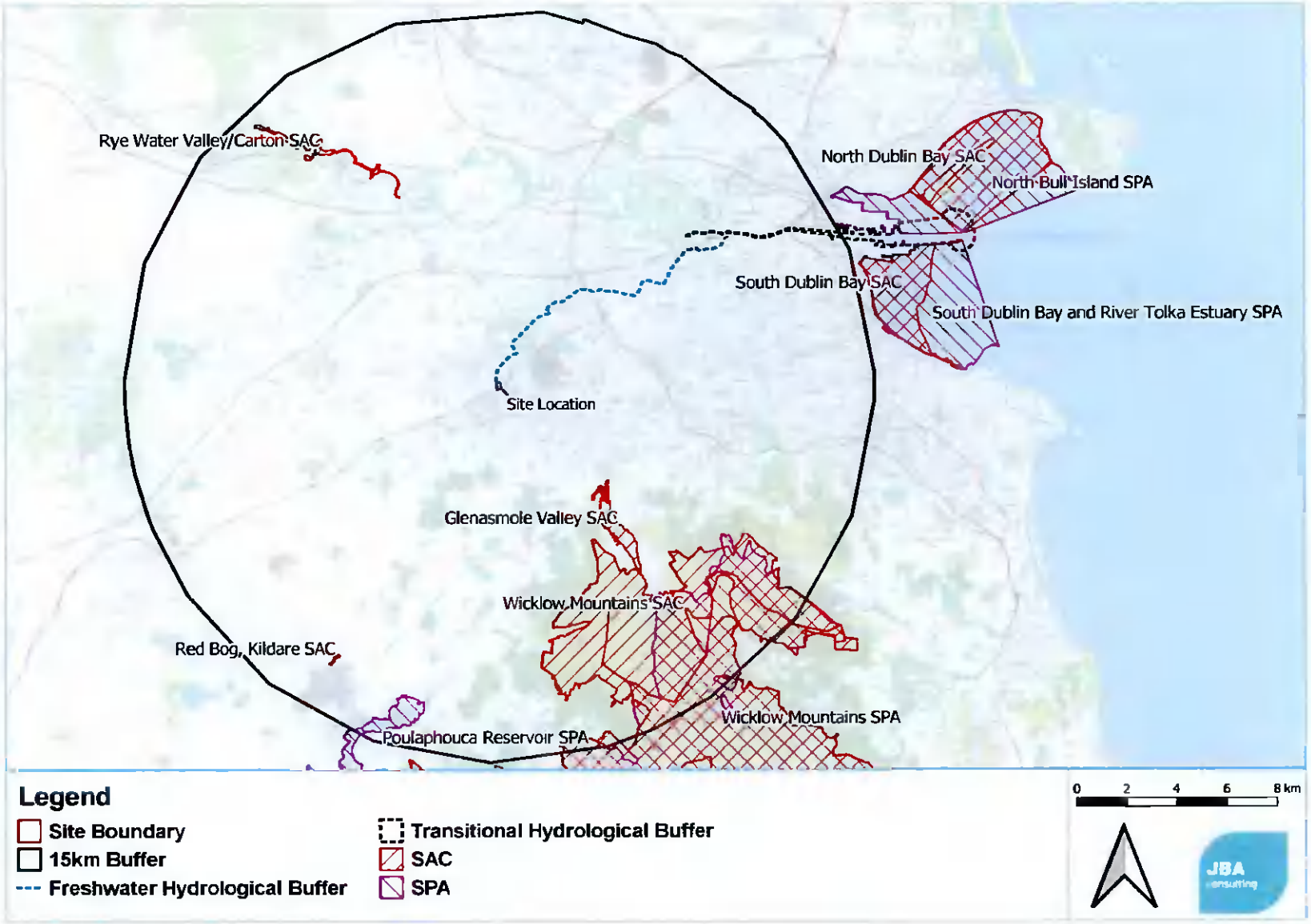


Figure 4-1: Statutory designated sites within the ZoI of the development

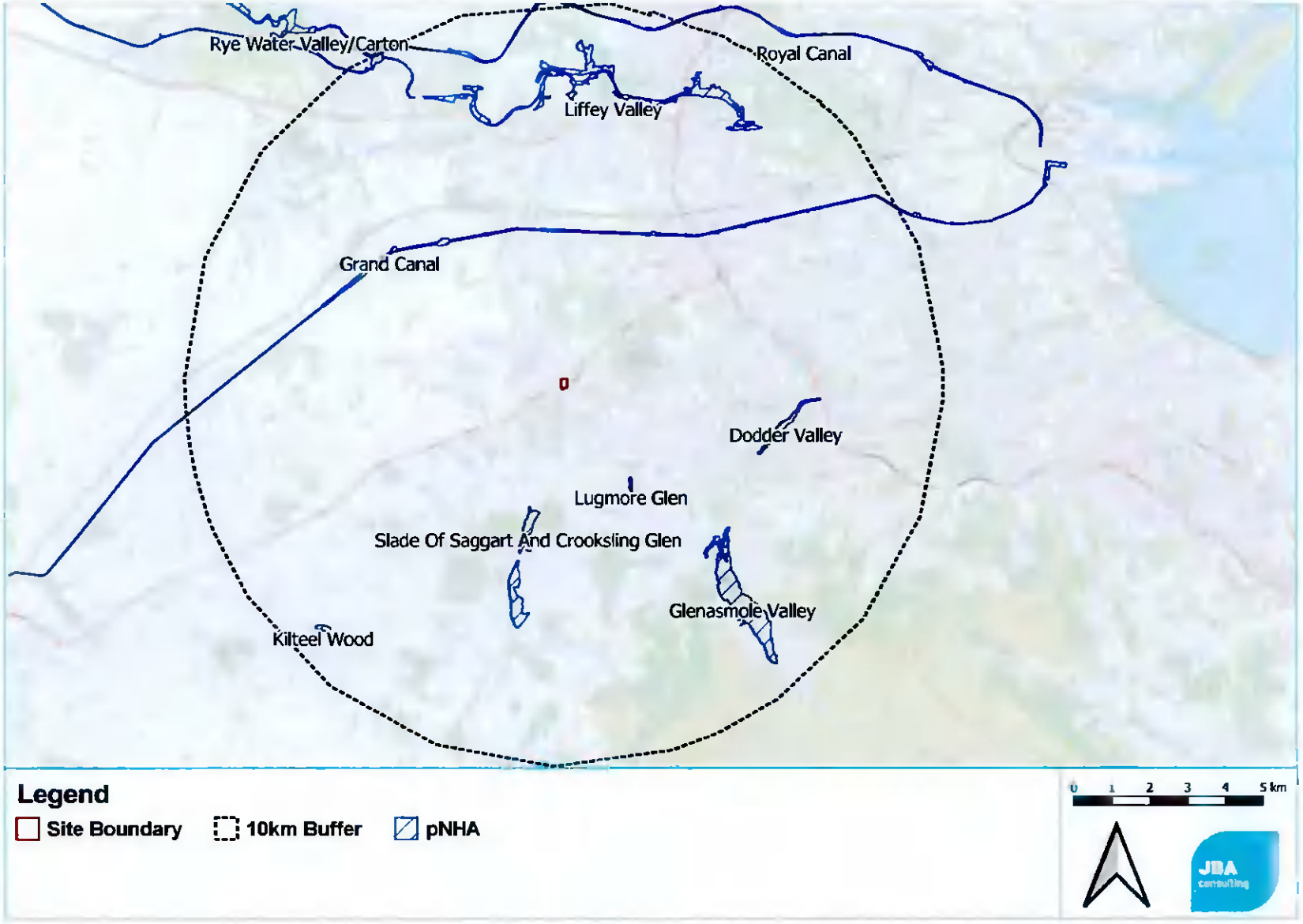


Figure 4-2: Non-statutory designated sites within the ZoI of the development

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, 2017a).	- Petrifying Springs* [1130] - Narrow-mouthed Whorl Snail (*Vertigo angustior*) [1014] - Desmoulin's Whorl Snail (*Vertigo moulinsiana*) [1016] (NPWS, 2018b)	Continuous urbanisation: Moderate impact (outside) Dispersed habitation: Low impact (outside)# Roads, motorways: Low impact (outside)# (Full list of threats / pressures - NPWS, 2017a)
Glenasmole Valley SAC	Glenasmole Valley lies at the northern foothills of the Dublin and Wicklow Mountains. Dry calcareous pasture grassland, improved to varying degrees, is a main habitat of the valley sides and occurs in association with wet grassland and, in places of seepage, fen or marsh type vegetation. The site has important examples of petrifying springs. The physical and chemical properties of the springs have been studied. Good examples of orchid rich calcareous grassland, including *Pseudorchis albida* (legally protected) and *Orchis morio* (Red Data Book species) are found here. Molinia meadows are also represented (NPWS, 2017b).	- Semi-natural dry grassland and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (*important orchid sites) [6210] - *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410] - Petrifying springs with tufa formation (*Cratoneurion*)* [7220] (NPWS, 2018b)	Discontinuous urbanisation: Moderate impact (outside)# (Full list of threats / pressures - NPWS, 2017b)
Red Bog, Kildare SAC	The site comprises a relatively small wetland which lies between moranic ridges. Open water is a principal habitat though there are no obvious inflowing or outflowing streams. Open water is fringed by various wetland habitats, with bog (raised type), fens and freshwater marsh. The surrounding land is improved grassland. An extensive quarrying operation occurs to the east and south of site. The site displays a succession from open water (eutrophic in status) to ombrotrophic bog. Transition mire vegetation is considered to be well represented at this site, with some typical species (NPWS, 2017c).	- Transition mires and quaking bogs [7140] (NPWS, 2018c)	Dispersed habitation: Moderate impact (outside)# (Full list of threats / pressures - NPWS, 2017c)
Wicklow Mountains SAC	An extensive upland site comprising much of the Wicklow Mountains and extending into Co. Dublin. The solid geology is mainly Leinster granites, flanked by Ordovician schists, mudstones and volcanics. The area has been glaciated and features fine examples of high corrie lakes, deep valleys and moraines. The site includes the headwaters of several major	- Otter (*Lutra lutra*) [1355] - Oligotrophic water containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110] - Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletalia uniflorae and/or Isoeto-Nanojuncetea [3130]	Wildlife watching: Low impact (inside)# Trampling, overuse: Moderate impact (both)#

Site Name	Brief	Qualifying Interests	Project-relevant Threats / Pressures: Impact (Source)
	rivers, including the Liffey, the Dargle and the Slaney. The substrate over much of the site is peat, with poor mineral soil on the slopes and lower ground. Exposed rock and scree are included in the features found in the SAC. The dominant habitats on the site are blanket bog, heaths and upland grassland. The site comprises the largest complex of upland habitats in eastern Ireland, with important examples of blanket bog, wet heath and dry heath, extensive in area and mostly of good quality. Alpine heath occurs at high levels, along with calcareous and siliceous rocky habitats harbouring an arctic-alpine flora. A fine series of oligotrophic lakes occur, with some recorded to contain Arctic char (*Salvelinus alpinus*). Several oakwoods of moderate quality, typical of the dry acidic woods of eastern Ireland, are found. Eurasian Otter (*Lutra lutra*) occurs on several of the riverine systems (NPWS, 2017d).	- Natural dystrophic lakes and ponds [3160] - Northern Atlantic wet heaths with *Erica tetralix* [4010] - European dry heaths [4030] - Alpine and Boreal heaths [4060] - Calaminarian grasslands of the *Violetalia calaminariae* [6130] - Species-rich Nardus grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) * [6230] - Blanket bogs (* if active bog) [7130] - Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*) [8110] - Calcareous rocky slopes with chasmophytic vegetation [8210] - Siliceous rocky slopes with chasmophytic vegetation [8220] - Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] (NPWS, 2017e)	Urbanised areas, human habitation: Moderate impact (both)# Collection (fungi, lichen, berries etc): Low impact (inside)# Outdoor sports and leisure activities, recreational activities: Moderate impact (both)# Paths, tracks, cycling tracks: Moderate impact (both)# (Full list of threats / pressures - NPWS, 2017d)
Poulaphouca Reservoir SPA	Poulaphouca Reservoir is located in the western foothills of the Wicklow Mountains. The site is of national importance for its population of Greylag goose (*Anser anser*), which is one of the largest in the country. The site provides the main roost for the birds, with feeding mostly on improved grassland outside of the site. A range of other waterfowl species occur in relatively low numbers, including Whooper Swan (*Cygnus cygnus*), Eurasian Wigeon (*Anas penelope*) and Common Goldeneye (*Bucephala clangula*). The reservoir attracts roosting gulls during winter, most notably a large population of Lesser Black-backed gull (*Larus fuscus*), which in Ireland is rare in winter away from the south coast (NPWS, 2017f).	- Greylag Goose (*Anser anser*) [A043] - Lesser Black-backed Gull (*Larus fuscus*) [A183] (NPWS, 2018d)	Hunting: Low impact (inside)# Leisure fishing: Low impact (inside)# Nautical sports: Moderate impact (inside)# (Full list of threats / pressures - NPWS, 2017f)
Wicklow Mountains SPA	This is an extensive upland site, comprising a substantial part of the Wicklow Mountains. The site supports good examples of both upland and woodland bird communities. It has breeding Merlin (*Falco columbarius*) and Peregrine Falcon (*Falco peregrinus*), as well as Ring Ouzel (*Turdus torquatus*) and Red Grouse (*Lagopus lagopus*), both of the latter being Red listed in Ireland. It is the only site in Ireland where Common Merganser (*Mergus merganser*) breeds regularly (NPWS, 2017g).	- Merlin (*Falco columbarius*) [A098] - Peregrine Falcon (*Falco peregrinus*) [A103] (NPWS, 2018e)	Walking, horse-riding and non-motorised vehicles: High impact (inside)# Paths, tracks, cycling tracks: Moderate impact (inside)# (Full list of threats / pressures -

Site Name	Brief	Qualifying Interests	Project-relevant Threats / Pressures: Impact (Source)
			NPWS, 2017g)
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, 2017h).	- 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) Industrial or commercial areas: High impact (outside) Nautical sports: Moderate impact (inside)# Bait digging collection: Moderate impact (inside)# Walking, horse-riding and non-motorised vehicles: High impact (inside)# Leisure fishing: Low impact (inside)# Antagonism with domestic animals: High impact (inside)# (Full list of threats / pressures - NPWS, 2017h)
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. 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, 2017i).	- 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) Industrial or commercial areas: High impact (outside) Bait digging collection: Moderate impact (inside)#

Site Name	Brief	Qualifying Interests	Project-relevant Threats / Pressures: Impact (Source)
			Paths, tracks, cycling tracks: Moderate impact (inside)# Walking, horse-riding and non-motorised vehicles: High impact (inside)# Nautical sports: Moderate impact (inside)# Non-motorised nautical sports: Moderate impact (inside)# Discharges: Moderate impact (both) (Full list of threats / pressures - NPWS, 2017i)
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, 2017j).	- 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]	Leisure fishing: Moderate impact (inside)# Industrial or commercial areas: High impact (outside) Urbanised areas, human habitation: High impact (outside) Nautical sports: Moderate impact (inside)# Bait digging collection: Moderate impact (inside)# Walking, horse-riding and non-motorised vehicles: High impact (inside)#

Site Name	Brief	Qualifying Interests	Project-relevant Threats / Pressures: Impact (Source)
		(NPWS, 2015a)	(Full list of threats / pressures - NPWS, 2017j)
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 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, 2018e).	- 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] - 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)	Leisure fishing: Moderate impact (inside)# Industrial or commercial areas: High impact (outside) Urbanised areas, human habitation: High impact (outside) Nautical sports: Moderate impact (inside)# Bait digging collection: Moderate impact (inside)# Walking, horse-riding and non-motorised vehicles: High impact (inside)# (Full list of threats / pressures - NPWS, 2017k)

* = 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 10km ZoI

Site Name	Brief	Ecological Features of Conservation Concern
Slade Of Saggart And Crooking Glen pNHA	This site is located in the south-west of Co. Dublin and stretches from Brittas northwards to approximately 2km south of Saggart. The northern half of the site comprises a river valley with steep tree-covered sides, while the southern side is flatter and contains two small lakes, the Brittas Ponds. The trees are mostly of planted origin with fine specimens of Beech (*Fagus sylvatica*), Ash (*Fraxinus excelsior*), Oak (*Quercus* spp.) and Birch (*Betula* spp.); with some Whitebeam (*Sorbus hibernica*) also occurring. The flora of the site is notable for the presence of the rare Red Data Book species, Yellow Archangel (*Lamiastrum galeobdolon*). South of Crooksling Glen are Brittas Ponds, a Wildfowl Sanctuary, that supports a variety of wildfowl, including Teal, Mallard, Pochard and Tufted Duck (NPWS, 2009a).	- Whitebeam (*Sorbus hibernica*) - Yellow Archangel (*Lamiastrum galeobdolon*) - Teal (*Anas crecca*) - Mallard (*Anas platyrhynchos*) - Pochard (*Aythya ferina*) - Tufted Duck (*Aythya fuligula*)
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*)
Lugmore Glen pNHA	This small wooded glen is located about 2km south-east of Saggart in Co Dublin. It is quite a narrow valley cut in glacial drift. A small stream winds through the valley. The wood is mainly comprised of dense Hazel (Corylus avellana) but also contains Ash, Elder (*Sambucus nigra*) and Blackthorn (*Prunus spinosa*). The herb layer is quite rich, especially towards the stream, with species such as Wood-sorrel, Bugle (*Ajuga reptans*), Primrose (*Primula vulgaris*), Honeysuckle (*Lonicera periclymenum*), Bluebell (*Hyacinthoides non-scripta*), Ivy (*Hedera hibernica*), Wood-sedge (*Carex sylvatica*), Woodruff (*Galium odoratum*) and Wood Speedwell occurring. The importance of this site is that it is a fine example of a wooded glen with a good representation of woodland plants. The flora of the site is notable for the presence of the rare Red Data Book species, Yellow Archangel.	- Yellow Archangel (*Lamiastrum galeobdolon*)
Kilteel Wood pNHA	This site is located about 10km north-east of Naas and immediately east of the village of Kilteel. The wood is situated on a hill which rises to 248m. The site is a small heathy wood mostly of Oak (*Quercus* spp.) and Downy Birch (*Betula pubescens*). Other trees present include Beech, Sycamore (*Acer pseudoplatanus*), Ash and Scots Pine (*Pinus sylvestris*). In a clearing gorse (*Ulex europaeus, U. gallii*) and Heather (*Calluna vulgaris*) occur. The ground vegetation is restricted, with the following species – Bilberry (*Vaccinium myrtillus*), Bluebell, Greater Stitchwort (*Stellaria holostea*), Wood Sage (*Teucrium scorodonia*), Heath Bedstraw (*Galium saxatile*), Red Fescue (*Festuca rubra*), Wavy Hair-grass (*Deschampsia flexuosa*) and Creeping Soft-grass (*Holcus mollis*). This site is a fine example of a largely deciduous wood (NPWS, 2009c).	- General: Good quality deciduous woodland
Glenasmole Valley pNHA	As per the Natura 2000 SAC description.	As per those outlined in Natura 2000 SAC description.
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.	- Atlantic Salmon (*Salmo salar*) - Green Figwort (*Scrophularia umbrosa*) - Hairy St. John's-wort (*Hypericum hirsutum*) - Yellow Archangel (*Lamiastrum galeobdolon*)

Site Name	Brief	Ecological Features of Conservation Concern
	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 (*Typha 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).	
Dodder Valley pNHA	This stretch of the River Dodder extends for about 2 km between Firhouse Bridge and Oldbawn Bridge in the south-west of Dublin City. The vegetation consists of woodland scrub mainly comprising Willows spp., but up to thirteen species of tree have been recorded. The understorey vegetation contains a good variety of plant species, including Early-purple Orchid (*Orchis mascula*) and Bugle. Along the banks there are wildflower meadows with a good diversity of plant species. Forty-eight bird species have been recorded recently in the area, including Little Grebe (*Tachybaptus ruficollis*), Kingfisher (*Alcedo atthis*), White-throated Dipper (*Cinclus cinclus*) and Grey Wagtail (*Motacilla cinerea*). Part of the riverbank supports a Sand Martin (*Riparia riparia*) colony of up to 100 pairs. The site also supports a population of Otter. The site represents the last remaining stretch of natural riverbank vegetation on the River Dodder in the built-up Greater Dublin Area (NPWS, 2009e).	- Little Grebe (*Tachybaptus ruficollis*) - Kingfisher (*Alcedo atthis*) - Grey Wagtail (*Motacilla cinerea*) - Sand Martin (*Riparia riparia*) - Otter (*Lutra lutra*)
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 Protected Species

National Biodiversity Data Centre (NBDC)

Records of protected fauna including invertebrates, amphibians, fish, birds and mammals collated from the NBDC (2021) database, present within the surrounding 10km within the past 10 years are listed in Appendix F. 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 3 Invasive Non-native Species

The records of high impact invasive non-native species collated from the NBDC (2021) database, present within the 2km buffer zone within the past 10 years are listed in Table 4-4 below.

Table 4-4. Proximity of invasive non-native species within 2km of the proposed site.

High Impact Invasive Non-native Species	Approximate distance from site
American Mink *Neovison vison*	1.0km
Grey Squirrel *Sciurus carolinensis*	2.0km
Japanese Knotweed *Reynoutria japonica*	0.3km
Himalayan Balsam *Impatiens glandulifera*	2.0km
Siberian Chipmunk *Tamias sibiricus*	2.0km
Fringed Water-lily *Nymphoides peltata*	0.5km

4 2 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.

4.2.1 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 (refer below).

4.2.2 Surface Water Status

The site lies within the Water Framework Directive (WFD) Liffey and Dublin Bay catchment and the sub-catchment Liffey SC 090 (EPA, 2021a). A tributary of the River Camac (CAMAC_020) is located along the western boundary of the proposed site flowing north, where it flows into the River Camac approximately 500m north of the site. The CAMAC_20 section currently has a 'Moderate' WFD (2013-2018) status and is also considered to be 'At Risk' (EPA, 2021a).

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.

4.2.3 Groundwater Status

The groundwater body which underlies the proposed site is the Dublin groundwater body (IE_EA_G_008). The WFD status for both groundwater bodies is currently marked as 'Good'; while its risk status is currently under review (EPA, 2021a).

The proposed developed will need to ensure that the proposed construction works will have no negative effect on this groundwater body and will support it maintaining 'Good' status into the future.

4.3 Site Visits

A baseline ecological and mammal survey was conducted by JBA Ecologist, William Mulville, on the 10/02/2021. Further species-specific surveys, namely Bat activity and White-clawed Crayfish surveys were conducted by JBA Ecologists on the 15/09/2021 and 27/10/2021, respectively. Habitats and species recorded are presented in detail in the following sections; and updated with each subsequent site visit.

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 in overleaf.

Table 4-5: Habitats recorded during site visit.

Habitat	Fossitt Code
Stone walls and other stonework	BL1
Buildings and artificial surfaces	BL3
Recolonising bare ground (outside site boundary)	ED3
Eroding / upland rivers	FW1
Dry calcareous and neutral grasslands (outside site boundary)	GS1
Dry meadows and grassy verges	GS2
Mosaic: Dry meadow and grassy verges / Scrub	GS2 / WS1
(Mixed) broadleaved woodland	WD1
Treelines	WL2
Scrub	WS1
Immature woodland	WS2

Figure 4-3 Habitat Map (additional off-site mapping provided by Enviroguide)

4 4 1 Stone walls and other stonework (BL1)

This habitat consists of the southern boundary wall that runs parallel to the N7. This old stone wall hosts Common Polypody *Polypodium vulgare* (Figure 4-4), as well as moss species. This habitat is considered to have high local ecological importance.

Figure 4-4: Common Polypody on the southern boundary wall

4 4 2 Buildings and other artificial surfaces (BL3)

This small artificial habitat, situated in the south-west corner of the site, consists of a small concrete area, which allows access to underground utility services; and a small areas of road along the eastern boundary. This habitat is considered to have less than local ecological importance.

4 4.3 Eroding / upland rivers (FW1)

This habitat refers to the tributary of the River Camac which flows along the western boundary of the site (Figure 4-5 overleaf). While the stream (approx. 2m width / 20-30cm depth) has been somewhat modified some natural riffle and pool features with varying substrate still remain in channel. Floral species recorded in-stream and along its banks included Fool's Watercress *Apium nodiflorum*; Water Plantain *Alisma plantago-aquatica*; Hart's Tongue fern *Asplenium scolopendrium*; Ivy *Hedera hibernica*; and Bramble *Rubus fructicosus agg*. Two Otter latrines with multiple old and fresh spraints were recorded on boulders within the stream, as well as potential resting couch worn into the right bank. This habitat is considered to have county level ecological importance.

Figure 4-5: Camac tributary flowing along the western boundary of the site

4 4 4 Dry meadows and grassy verges (GS2)

The proposed site was largely dominated by dry meadow habitat (Figure 4-6). The floral assemblage of this habitat typically comprised of Cock's Foot *Dactylis glomerata*; False Oat-grass *Arrhenatherum elatius*; Meadow Foxtail *Alopecurus pratensis*; Bush Vetch *Vicia sepium*; Ribwort Plantain *Plantago lanceolata*; Ragwort *Jacobaea vulgaris*; Willowherb *Epilobium* spp.; Hogweed *Heracleum sphondylium*; Thistle *Cirsium* spp.; Dock *Rumex* spp.; Bramble; Nettle *Urtica dioica;* and saplings of Willow *Salix* spp.; Blackthorn *Prunus spinosa*; Alder *Alnus glutinosa*; Pedunculate Oak *Quercus robur*; and Evergreen Oak *Quercus ilex*. Small depressions forming wetter environments also hosted Soft Rush *Juncus effusus*. Blue Tit *Cyanistes caeruleus* were observed utilising this habitat. This habitat is considered to have low local ecological importance.

Figure 4-6: Dry meadow with scrub-to-immature woodland-to-mature woodland habitat progression

4 4 5 Mosaic Dry meadows and grassy verges / Scrub (GS2 / WS1)

This mosaic habitat is located central northern section of the site. Here habitat succession is taking place as the dry grassland begins its transition into scrubland. This habitat contains the same species

as described in the GS2 habitat, but the ratio and general cover of scrub species is now much higher. This habitat is considered to have low local ecological importance.

4.4.6 (Mixed) broadleaved woodland (WD1)

Running the length of the western site boundary the linear mixed broadleaved woodland is one of the more prominent site features. The woodland is comprised of Alder; Sycamore *Acer pseudoplatanus*; Black Poplar *Populus nigra*; Willow spp.; Elder *Sambucus nigra*; and Ash *Fraxinus excelsior*; with a floral understorey assemblage of Ground-ivy *Glechoma hederacea*; Wood Sedge *Carex sylvatica*; Ivy; Hogweed; Common Primrose *Primula vulgaris*; Bramble; Cow Parsley *Anthriscus sylvestris*; Nettle; Hart's Tongue-fern; and moss species. This woodland also hosts a potentially inactive Otter *Lutra lutra* holt along the banks of the Camac tributary as well as a potentially inactive Badger *Meles meles* sett (2-entrances). Blackbird *Turdus merula*; Wood Pigeon *Columba palumbus*; Robin *Erithacus rubecula*; and Sparrowhawk *Accipiter nisus* were recorded utilising the woodland. This habitat is considered to have high local ecological importance.

4.4.7 Treelines (WL2)

A treeline consisting of Small-leaved Lime *Tilia cordata*; Hawthorn and Willow spp. runs parallel to the road, just beyond the north-east boundary of the site. Towards its northern extent this treeline begins to merge with the (mixed) broadleaved woodland strip. This treeline habitat is considered to have high local ecological importance.

4.4.8 Scrub (WS1)

Scrubland habitat was recorded along the southern boundary wall; in patches within the dry meadow; and along the edge of the immature woodland habitat. The floral species assemblage comprised of Bramble; Nettle; Thistle spp.; Hogweed; Willowherb spp.; and saplings of Alder; Willow spp.; and Blackthorn. This habitat is considered to have high local ecological importance.

4.4.9 Immature woodland (WS2)

Habitat succession has resulted in scrub maturing into immature woodland habitat on the edge of established mixed broadleaved woodland. This habitat contains the same species as the scrub habitat, with tree species saplings now maturing to heights of 4-5 metres. The invasive non-native Butterfly-bush *Buddleja davidii* was recorded within this habitat. Wren *Troglodytes troglodytes* was observed utilising this habitat. This habitat is considered to have high 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 on-site (NBDC, 2021).

4.6 Protected Fauna

4.6.1 Otter

A potential inactive Otter holt is located in the south-west corner of the site, along the right bank of the Camac tributary (Figure 4-7 overleaf). The entrance was approximately 11 inches wide and 9 inches in height. The level of Ivy growth and debris in the entrance would suggest that this holt has not been used for over 6 months. A follow-up check of this potential holt was conducted in coincidence with the White-Clawed Crayfish survey (27/10/2021); JBA Ecologists recorded no new sign of activity around this potential holt. However, multiple signs of Otter habitation were recorded within the stream, including two latrines with multiple spraints of various ages on in-stream boulders (Figure 4-8), as well as a couch (resting area) worn into the right bank suggesting long-term use in this section of the stream. Additionally, the spraints highlighted that White-clawed Crayfish form part of the local Otter populations diet. Otters are regarded as being of international ecological importance given the level of EU protections afforded to them under the Habitats Directive.

Figure 4-7: Potentially abandoned Otter holt along the bank of the Camac tributary

Figure 4-8: One of the two Otter latrines (boulder)

4 6 2 Badger

A potential inactive Badger sett is located in the north-west corner of the proposed site, within the mixed broadleaved woodland habitat (Figure 4-9). The potential sett had two entrances, both measuring approximately 13 inches wide and 10 inches in height. The entrances had not been grown over by the surrounding vegetation but did contain vegetative debris, suggesting that this sett was in use within the last 6 months. The sett may be an outlier or satellite sett within a Badger's home range, meaning that it will only ever be used sporadically. A follow-up check of this potential sett was conducted in coincidence with the White-Clawed Crayfish survey (27/10/2021); JBA Ecologists recorded no new sign of activity around the potential sett. Badgers are protected under the Ireland's Wildlife Act, and are considered to be of county level ecological importance in the context of this site.

Figure 4-9: Potentially abandoned Badger sett located within the mixed broadleaved woodland

4 6 3 Bats

Three species of bat, namely Common Pipistrelle *Pipistrellus pipistrellus*; Soprano Pipistrelle *Pipistrellus pygmaeus*, and Leisler's Bat *Nyctalus leisleri*, have been recorded by JBA in recent years within 2km of the proposed development (JBA, 2019). Additionally, four other bat species, namely Natterer's Bat *Myotis nattereri*; Daubenton's Bat *Myotis daubentonii*; Brown Long-eared Bat *Plecotus auratus*; and Whiskered Bat *Myotis mystacinus*, have been recorded within 10km of the proposed development site in recent years (JBA, 2020; 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.

Preliminary Bat Roost Survey

The preliminary bat roost survey (10/02/2021) carried out on-site found no evidence of any potential bat roosting features amongst the mature trees present within and directly adjacent to the proposed development site.

Transect Bat Activity Survey

The transect survey on 15th September 2021 commenced at 19:45 (sunset) and was 2 hours in length. The weather during the survey was cloudy and approximately 14-17°C.

Table 4-6 overleaf displays the bat observations recorded by surveyors during the transect bat activity survey.

Table 4-6: Transect bat recordings 15/09/2021

Species	Surveyors		Recordings Total
	Surveyor 1	Surveyor 2	
Soprano Pipistrelle	1 recording (56kHz) - Commuting along western boundary	1 recording (56kHz) - Foraging over western immature woodland	**2**
Leisler's Bat	2 recordings (23kHz) - Commuting along northern and southern boundaries	3 recordings (21-22kHz) - Commuting along southern and eastern boundaries	**5**

Static Bat Activity Survey

A static bat detector was placed along the north-western boundary, facing south-east in towards the site. This location was selected as the best possible location to ensure that any bats passing through the site would be detected if calling. The results from the analysis of the static bat detector are shown in Table 4-7 below.

Table 4-7: Number of bat pass recordings for individual species on each survey night (Sept 2021)

Species	Dates					
	15/09/21	16/09/21	17/09/21	18/09/21	19/09/21	Overall Total
Common Pipistrelle	0	0	0	2	0	**2**
Soprano Pipistrelle	4	0	3	5	0	**12**
Leisler's Bat	11	0	310	140	0	**461**
Daily Bat Pass Total	**15**	**0**	**313**	**147**	**0**	**475**

The static bat detector recorded a total of three bat species, Leisler's Bat, Common Pipistrelle and Soprano Pipistrelle, and 475 passing bat calls. Generally, the presence of bats on the site varies notably, but given the seasonally late timing of the surveys (migrations to hibernation roost areas in progress) and the less suitable weather conditions, this degree of bat activity fluctuation is to be expected. Most bat activity was recorded on the third night of the recording, 17th September, with a peak in activity on-site for Leisler's Bat; while the fourth night, 18th September, was the only night to record all three bat species within the site.

4 6 4 Other mammals

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:

- Hedgehog *Erinaceus europaeus*
- Pygmy Shrew *Sorex minutus*
- Irish Hare *Lepus timidus subsp. hibernicus*

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.

4.6.5 Breeding Birds

Three birds of conservation concern, namely Wood Pigeon (JBA, 2020); Willow Warbler *Phylloscopus trochilus*; Linnet *Carduelis cannabina*; Swallow *Hirundo rustica*; and Grey Wagtail *Motacilla cinerea* (Enviroguide, 2021) were recorded either within the site or its surrounding area. Wood Pigeon is protected under Annexes II(I) and III(I) of the EU Birds Directive, while Willow Warbler, Linnet and Swallow are listed on the Amber List (Breeding) of Birds of Conservation Concern. Grey Wagtail is currently list under the Red List (Breeding) of Birds of Conservation Concern. All of the above are also protected under Ireland's Wildlife Act 1976 (and its subsequent amendments). The woodland and treelines of the proposed site offer suitable nesting habitat for breeding birds. As a precautionary approach the site has been valued as being of high local ecological importance (higher value) for birds.

4.6.6 Common Frog

While Common Frog *Rana temporaria* was not recorded during the walkover survey, the notably wet ground depression bordering the north-west corner of the site is likely to support a Frog population as well as offering potential spawning habitat. 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

European Eel *Anguilla anguilla* and River Lamprey *Lampetra fluviatilis*. have been recorded several kilometres downstream of the site in the River Camac (IFI, 2011; 2018). European Eel is currently has Critically Endangered IUCN status and is protected under the OSPAR Convention, while River Lamprey species are protected under the Annex II and V of the EU Habitats Directive. European Eel and River Lamprey are regarded as being of international ecological importance given the level international and EU protections afforded to them under the OSPAR Convention and the Habitats Directive.

4.6.8 White-clawed Crayfish

A White-clawed Crayfish survey was conducted within the Camac tributary present on-site, in line with a Further Information request from SDCC. This survey was carried out by Ecologist William Mulville, a holder of a White-clawed Crayfish Full licence, with permission to conduct Basic manual stone turning / hand net surveys (diurnal and nocturnal surveys). William was assisted by fellow JBA Ecologist Patricia Byrne.

The surveyors recorded no White-clawed Crayfish individuals within the stretch of the tributary which runs along the border of the site. The stream habitat provided little appropriate refuge habitat, i.e., the stream was lacking in suitably loose small and large boulders; as well as having unsuitable banks for crayfish burrows. However, the surveyors did record an Otter spraint which consisted of entirely White-clawed Crayfish remains (Figure 4-10 overleaf). This proves that while White-clawed Crayfish are not present within this stretch of the Camac tributary along the border of the site, they are present in the local Camac system, most likely downstream in the main channel of the River Camac. White-clawed Crayfish are regarded as being of international ecological importance given the level of protection afforded to the species under Wildlife Act 1976 (& Amendments); and Annexes II and V of the Habitats Directive.

Figure 4-10: White-clawed Crayfish exoskeleton remains within an Otter spraint

4 7 Invasive Non-native Species (On-site)

One invasive non-native species was recorded on-site during the ecological walkover, namely Butterfly-bush. This species is stated to be a Medium impact species (NBDC, 2021), but is not listed on the third schedule of the EC (Birds and Natural Habitats) Regulations 2011 S.I. No. 477/2011.

4 8 Existing Wildlife Corridor

The wildlife corridor present within the site is comprised of the Camac tributary, the mixed deciduous woodland, immature woodland and scrub habitats. This wildlife corridor provides landscape connections across the local area, including the downstream section of the Camac tributary, along with its accompanying riparian treeline, as it flows north towards its confluence with the River Camac; as well as the deciduous woodlands and dry grasslands to the north-east of the proposed site. The functional value of these corridor connections is highly valuable to local terrestrial mammal, bat and bird species. The safeguarding of this functional within the local area will be a priority within the mitigation measures proposed for the is development.

4 9 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 (lack of connectivity)
Glenasmole Valley SAC	International	Screened out (lack of connectivity)
Red Bog, Kildare SAC	International	Screened out (lack of connectivity)
Wicklow Mountains SAC	International	Screened out (lack of connectivity)
Poulaphouca Reservoir SPA	International	Screened out (lack of connectivity)
Wicklow Mountains SPA	International	Screened out (lack of connectivity)
North Dublin Bay SAC	International	Screened out (distance)
South Dublin Bay SAC	International	Screened out (distance)
North Bull Island SPA	International	Screened out (distance)
South Dublin Bay and River Tolka Estuary SPA	International	Screened out (distance)
Slade Of Saggart And Crookling Glen pNHA	National	Screened out (lack of connectivity)
Grand Canal pNHA	National	Screened out (lack of connectivity)
Lugmore Glen pNHA	National	Screened out (lack of connectivity)
Kilteel Wood pNHA	National	Screened out (lack of connectivity)
Glenasmole Valley pNHA	National	Screened out (lack of connectivity)
Liffey Valley pNHA	National	Screened out (lack of connectivity)
Dodder Valley pNHA	National	Screened out (lack of connectivity)
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	High Local	**Screened in**
Buildings and artificial surfaces	Less than local	Screened out
Eroding / upland rivers	County	**Screened in**
Dry meadows and grassy verges	Low Local	**Screened in**
Dry meadow and grassy verges / Scrub	Low Local	**Screened in**
(Mixed) broadleaved woodland	High Local	**Screened in**
Treelines	High Local	**Screened in**
Scrub	High Local	**Screened in**
Immature woodland	High Local	**Screened in**
Otter	International	**Screened in**

Designated site / Ecological feature	Value	Screening
Badger	County	**Screened in**
Bats	International	**Screened in**
Other mammals	High Local	**Screened in**
Breeding birds	High Local	**Screened in**
Common Frog	High Local	**Screened in**
European Eel & River Lamprey	International	**Screened in**
White-clawed Crayfish	International	**Screened in**

5 Potential Impacts

5.1 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.

5.2 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.

5.2.1 Habitats & Species

Stone walls and other stonework

The old stone and mortar wall that runs along the southern boundary of the proposed site is to be retained under the site design. However, this linear habitat may experience some negative, physical impacts during the site landscaping process, for example mounds of soil placed directly beside the wall, impacting its ability to act as wildlife corridor for smaller terrestrial animals; and/or the purposeful or accidental strip of vegetation from the stone wall, degrading the habitat. Therefore, in the absence of mitigation, this habitat is vulnerable to minor adverse impacts during the construction phase.

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

Eroding / upland rivers, Otter, Common Frog, European Eel, River Lamprey and White-clawed Crayfish

For the eroding / upland river habitat (Camac tributary), the main impact concerns would be that of accidental introduction of pollutants (e.g. hydrocarbon leakages from site machinery) and excess sediment from the excavations and soil works. These inputs would lead to the degradation of the tributary and the River Camac itself downstream; as well as the protected aquatic and riverine species that it supports, notably including Otter; Common Frog; European Eel; River Lamprey and White-clawed Crayfish. Therefore, in the absence of surface water-based mitigation, minor adverse impacts on the eroding / upland river habitat and the species it supports are anticipated during the construction phase.

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 limestone till sediments, with low subsoil permeability characteristics. As result of the above characteristics the site's aquifer vulnerability status is rated as 'Low-Moderate'. 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 River Camac, within the short flow paths present in the local bedrock (GSI, 2021). Therefore, there is the potential for groundwater-to-surface water impacts for Camac tributary and the River Camac; and the protected species they host. Therefore, in the absence of groundwater-based mitigation, minor adverse impacts on the eroding / upland river habitat and the species it supports are anticipated during the construction phase.

Operational surface water impacts from the development are not anticipated given the series of SurfSep silt traps (or similar approved), Klargester Class 1 Bypass Petrol Interceptor (or similar approved) and Stormtech Attenuation Systems (MC3500) serving the proposed warehouse and accompanying infrastructure will negate any surface water-based pollutants before discharging into the Camac tributary. Furthermore, foul water systems will be connecting to the existing infrastructure within the Brownsbarn area, which is ultimately served by the Ringsend WWTP.

Dry meadows and grassy verges

The dry meadow areas of the site will experience large scale habitat loss as a result of the development, both during the construction and operational phases of the development. This habitat will only be retained along the boundaries and woodland edges of the site. This habitat loss will have knock-on adverse impacts on foraging for local terrestrial mammal, bat and bird populations.

(Mixed) broadleaved woodland, Badger, and Otter

The main impact concerns for the mixed broadleaved woodland, and its potential inhabitants (Badger and Otter), would be that of an accidental introduction of pollutants (e.g. hydrocarbon leakages from site machinery), which would generally degrade the quality of the habitat, potentially resulting in a die-back of the understorey which provides shelter, as well as foraging opportunities. Additionally, physical compaction impacts may take place within the eastern rooting zone, potentially causing a number of trees to die-off and potentially collapse. This would reduce the refuge provided by the woodland, leaving the inactive Otter holt and Badger sett more vulnerable to disturbance, as well as potentially collapsing or exposing the tunnel network of these underground shelters. Furthermore, should the inactive Otter holt and/or Badger sett become active again before construction works begin, breeding activities of these species may be negatively impacted. Therefore, in the absence of mitigation, this habitat and these species will be vulnerable to minor adverse impacts.

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

Treelines

While this treeline exists beyond the north-eastern boundary, the root system of these trees may extend up to the boundary of the site. Physical compaction impacts via machinery may take place within the rooting zone, potentially degrading the root systems associated with this treeline.

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

Scrub

The scrubland areas of the site will experience large scale habitat loss as a result of the development, both during the construction and operational phases of the development. Scrub will persist in the understorey of the site's woodland edges. This habitat loss will have knock-on adverse impacts on foraging and nesting / denning activities, as well as available refuge for local terrestrial mammal, bat and bird populations. The loss of this habitat will reduce the overall width of the wildlife corridor present within the site.

Immature Woodland

The immature woodland will experience large scale habitat loss as a result of the development, both during the construction and operational phases of the development. Immature woodland will persist in a thin linear strip along the woodland edges. This habitat loss will have knock-on adverse impacts on foraging and nesting / denning activities, as well as available refuge for local terrestrial mammal, bat and bird populations. The loss of this habitat will reduce the overall width of the wildlife corridor present within the site.

Bats

The seven bat species that are potentially using the site 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 currently has moderate foraging and commuting suitability for

bats given the variety of habitats present on-site, including a watercourse. However, potential minor impacts on individuals using the site could be posed by external lighting during construction and operation.

Impacts during construction will be temporary and given the presence of woodland and grasslands adjacent to the site, which would provide alternative commuting and foraging habitats for bat, temporary impacts are not anticipated to be significant. However, lighting used incorrectly could also impact on surrounding habitats.

The proposed lighting design is concentrated on the warehouses and parking lighting within the site. The impact of this light could reduce the adjacent habitats suitability for commuting and foraging bats. The site is located in an already partially urbanised industrial area, where impacts of lighting are already occurring. It is important to maintain connectivity between the surrounding green areas and the small, local watercourses; and the development's lighting design and planting plan must compliment the current potential commuting routes (vegetated dark corridors).

Therefore, in the absence of lighting design mitigation, operational impacts from the development on bat species are anticipated.

Hedgehog; Pygmy Shrew; and Irish Hare

While no signs of Hedgehog, Pygmy Shrew or Irish Hare 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, minor 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 development on these species are not anticipated.

Breeding Birds

Local breeding bird species will potentially be physically disturbed from their foraging activities during the construction works. Additionally, there will be a temporary decrease in available nesting trees with removal of the immature woodland and scrub habitat, although only a small number of these trees and shrubs could provide nesting opportunities. 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 clearance of trees 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.

5.3 Invasive Non-native Species

While one individual Butterfly-bush specimen is present within the site boundary, this is set to be cleared along with the rest of the immature woodland, therefore their potential impact on local biodiversity is negligible.

5.4 In-combination Impacts

None of the potential in-combination projects requiring planning (Section 3-6) will result in any impacts on the any of the valued ecological features.

5.5 Summary

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

- Pollution of aquatic habitats and protected species that inhabit them (i.e. Otter; Common Frog; European Eel; and River Lamprey).
- Degradation of mixed woodland habitat and protected species that may inhabit it (i.e. Badger; Otter; Hedgehog and Pygmy Shrew) through physical damage and/or pollution during the construction phase.
- Large scale habitat loss of dry meadow, scrub and immature woodland habitat (reduce wildlife corridor), with knock-on adverse impacts to available refuge, foraging and nesting / denning opportunities for local terrestrial mammals (e.g. Irish Hare), bats and birds.

- 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, Willow Warbler, Linnet, Swallow and Grey Wagtail).

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

6 Mitigation

The following mitigation is recommended to ensure that the proposed development 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.

6 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.

6 1.1 Site Compound

- The site compound shall be located within the site boundary.
- The site's compound must be located at least 50m away from the Camac tributary present along western boundary of the site. These compound isolation measures must be strictly adhered to ensure no spills reach the watercourses.
- 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 (canteen, toilets, drying rooms, etc.);

  - Office for construction management team;

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

  - Temporary car parking facilities;

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

  - Site Security to restrict unauthorized entry;

  - 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.

6 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).
- At no point should there be storage of any materials or vehicles/machinery within 50m of the Camac tributary or the attenuation basin located beyond the north-western boundary area.
- 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), when performing excavations on-site in order to prevent any uncontrolled flow of surface water (with high sediment loading) from the site into the Camac tributary or the attenuation basin located beyond the north-western boundary area.
- Surface water will be contained within the site as the existing riparian-zone buffer (10m min. width), comprising of mature woodland and well-established understorey, is to be retained; and thus, will act as a natural surface water run-off filter for sediments in the event of accidental diffuse run-off from the site

6 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

6.1 4 Mitigations for southern boundary stone wall habitat

During the construction phase, a protective buffer of at least 2m must be kept from the stone wall habitat. This will include the exclusion of machinery, materials storage and soil mounds. During the landscaping of this 2m buffer section there will be no removal of any of the flora which have established on the stone wall, with the exception of the Ivy, which may be careful trimmed back, where its growth is excessive. These measures will ensure the continuous function of the stone wall habitat as a wildlife corridor for small-sized fauna.

6 1 5 Mitigation for Vegetation Clearance (Scrub and Immature woodland)

The removal of vegetation from the scrub and immature woodland 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.

6 1.6 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 Otters; Badgers; Hedgehog; Pygmy Shrew; Irish Hare 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 woodland 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.

6 1 7 Pre-construction work mammal activity checks

Prior to the commencement of the construction phase, the activity levels of the potentially inactive Badger sett and Otter holt will have to be confirmed through sett / holt checks by a qualified ecologist, in combination with a camera-trap survey for both the potentially inactive sett and holt. These pre-construction surveys will follow best practice guidance outlined in Guidelines for the Treatment of Badgers Prior to the Construction of National Road Schemes (2008) and Guidelines for the Treatment of Otters Prior to the Construction of National Road Schemes (2008). Should the surveys reveal that either the sett or the holt is active, then further mitigations will need to be prescribed and incorporated into the development's CEMP prior to the construction phase.

6 2 Mitigation for Operation Phase

6 2 1 Biodiversity Enhancement mitigating for Dry meadow: Immature woodland and Scrub habitat loss

The landscape plan includes substantial remedial / supplementary tree and shrub planting within the proposed development. Enhancements include the transition from dry meadow, scrub and immature woodland to small-scale woodland strips, with diverse understorey shrubbery and adjacent wildflower meadows, will effectively turn these habitats into functioning wildlife corridors. Furthermore, the supplementary planting along the existing wildlife corridor will ensure the continued ecological function of this high-value ecological feature. The planting plan tree species for the site were specifically chosen, given their ability to support the local terrestrial mammals, bats and breeding bird populations of conservation concern.

Listed below are the trees to be planted and their biodiversity benefits:

- **Scots Pine** *Pinus sylvestris* - Preferred by Red Squirrel for building dreys
- **Alder** *Alnus glutinosa* - Supports diverse insect life, supplying local birds and bats with prey
- **Downy Birch** *Betula pubescens* - Supports numerous moth species supplying bats with prey. This species is also preferred by Greater Spotted Woodpecker *Dendrocopos major* for nest building. This has knock-on benefits for both Red Squirrel and bats species which occupy abandoned nests.
- **Bird Cherry** *Prunus padus* - The flowers support numerous pollinator species, while the fruits are often consumed by Badger, other small mammals and bird species
- **Sessile Oak** *Quercus petraea* - Supports diverse insect life, suppling local birds and bats with prey. Additionally, the acorns are consumed by Red Squirrel and Badger. This species is also preferred by Greater Spotted Woodpecker for nest building. This has knock-on benefits for both Red Squirrel and bats species which occupy abandoned nests.
- **Crack Willow** *Salix fragilis* - Supports diverse insect life, suppling local birds and bats with prey. Generally preferred by a number bird species for nesting.
- **Lime** *Tilia cordata* - Supports diverse insect life, including pollinator species like bees and moths. suppling local birds and bats with prey
- **Hazel** *Corylus avellana* - Provides food for the caterpillars of moths, suppling local birds and bats with prey. Additionally, hazelnuts are eaten by Greater Spotted Woodpecker, Wood Pigeon and small mammals.
- **Holly** *Ilex aquifolium* - Provides dense cover and good nesting opportunities for birds, while its deep, dry leaf litter may be used by Hedgehogs and small mammals for hibernation. Also supports pollinator species providing prey for bats and birds. Its berries are also an important food source for birds in the winter.

Additionally, the shrub species and wildflower mixture set to be sown on-site will greatly enhance overall biodiversity and support local pollinators, which in turn serve as prey for local bird and bat species.

6 2 2 Site Lighting Design

Hours of illumination

Site lighting should be switched off or at lower light output during inactive site hours; this would benefit the bats foraging and/or commuting in the locality. Additionally, lighting should be controlled by occupancy / motion sensors so that it will remain off / low if there is no pedestrian traffic nearby.

Light levels and type

Site lighting that meets the lowest light levels permitted under health and safety would be preferable for bats in the vicinity. The specification and colour of light treatments, such as single bandwidth lights and no UV light are essential. LED luminaires are ideal and should be used where possible due to their sharp cut-off, lower intensity, and dimming capability. A warm white spectrum (2700K – 3000K) should be used to reduce the blue light component.

Column heights of lamp posts

As bats most likely forage in the unlit areas surrounding the site, the introduction of new lighting as a result of the new development, with accompanying light spillage, is anticipated to result in the bats becoming averse to commuting and foraging within the proposed site and potentially the adjacent habitats also. In order to reduce the amount of light spillage where it is not needed, the height of lamp columns should be restricted. A height of 6m or less is necessary to avert lighting impacts.

Dark corridors

Taking into consideration all of the above recommended mitigation measures, a dark corridor (lighted in a bat-friendly manner) leading from one end of the site to the other, should be maintained for bats at all times. This will allow for bats commuting through the site to do so safely. These dark corridors will be present along the northern and western boundaries of the site. Corridors will have bat-appropriate lighting and linear tree and shrub vegetation. The bat friendly, low intensity site lighting allows for the bats to commute along the outskirts of the site on their way to and from the local high value foraging site (e.g. River Camac).

All of the above lighting design recommendations have been incorporated by Axiseng Consulting Engineers into the site's lighting design (Appendix C).

6 2.3 Installation of bat boxes

In the interest of enhancing the site for the local bats (i.e., the pipistrelles and Leisler's Bat recorded on-site) a minimum of three bat boxes should be installed on-site, preferably along the north-western edge of the mixed deciduous woodland. If possible, these bat boxes should be south-facing and at least 4m off the ground. If erecting on a mature tree, the placement must be free from ivy with no branches within a 1m radius around the location of the box.

Within the Irish context, the Vincent's Wildlife Trust's reporting on Irish Bat Box schemes highlighted that 1FF Schwegler boxes (Figure 6-1 overleaf) are recommended for use by pipistrelle spp., whereas Leisler's Bat displayed no preference for bat box type (McAney and Hanniffy, 2015), therefore the 1FF Schwegler boxes will be suitable to house all bat species which frequent the site.

1FF

Height: 43 cm
Depth: 14 cm
Width: 27 cm
Entrance: 12-24 cm wide x 21 cm long
Weight: 9.9 kg

Figure 6-1: 1FF Schwegler Bat Box with dimensions (abstract from McAney and Hanniffy, 2015)

7 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.

7 1 Do Nothing Scenario

Under the current use of the site there is a neutral effect on the general ecology of the area. If the proposed works were not to go ahead, it is likely that the current regime of management of the land will continue as currently with no residual impacts.

7.2 Construction Phase

Preparation of the site for development will require clearance of the site's grassland, scrub and immature woodland vegetation, and some disturbance to foraging and commuting habitat for protected species such as terrestrial mammals and breeding birds.

Implementation of mitigation measures during the construction phase, such as protection of woodland to be retained; replanting of trees and shrubs to replace those lost during the clearance of scrub and immature woodland; 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 loss of habitat of local ecological importance for wildlife in the area.

7.3 Operational Phase

The proposed mitigation, including dark corridors for local bat species; enhancement measures of additional planting to safeguard the function of the existing wildlife corridor; and bat boxes for the operational phase should act to improve existing habitats for all species and will have a neutral - negligible residual impact that will become positive - neutral in time.

8 Summary of Impact Assessment

8.1 EcIA Table

Table 8-1 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 8-1: Summary of Impacts; Mitigations; Significance of Residual Impacts

Ecological Features	Impacts	Importance of Feature	Significance of impact without Mitigation	Mitigation	Significance of Residual Impacts
Stone walls and other stonework	Physical damage and disturbance to floral species from construction and landscaping activities. Loss of function as a wildlife corridor for small-sized fauna.	High Local	Low impact: Negligible significance	Strict adherence to: Best practice guidance / mitigation measures listed Section 6.1.4 pertaining to the safeguarding of the functionality of the stone wall habitat, as well as its faunal and floral inhabitants.	Neutral significance
Eroding / upland rivers (Camac tributary)	Reduction in water quality (habitat) as a result of polluting inputs, namely hydrocarbons and excess sediments.	County	Low impact. Minor significance	Strict adherence to: Best practice guidance / mitigation measures listed in Sections 6.1.1, 6.1.2, 6.1.3, and 6.1.6 pertaining to the protection of surface water and groundwater; and the habitats and species reliant on them; the retention of the mixed woodland as a naturally filtering riparian buffer, as well as general disturbance of nocturnal animals, i.e. Common Frog.	Negligible significance
Common Frog		High Local	Low impact: Negligible significance		Neutral significance
European Eel		International	Low impact: Moderate significance		Negligible significance
River Lamprey		International	Low impact: Moderate significance		Negligible significance
White-clawed Crayfish		International	Low impact. Moderate significance		Negligible significance
(Mixed) broadleaved woodland	Degradation of habitat through physical or polluting impacts.	High Local	Low impact: Negligible significance	Strict adherence to: Best practice guidance / mitigation measures listed in Sections 6.1.1, 6.1.2, 6.1.3, 6.1.6 and 6.1.7 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 Otter; as well as the pre-	Neutral significance
Treelines	Degradation of habitat through physical or polluting impacts.	High Local	Low impact: Negligible significance		Neutral significance
Badger	Disturbance to potential inactive sett, foraging and commuting activities within the vicinity of the site.	County	Low impact: Minor significance		Negligible significance

Ecological Features	Impacts	Importance of Feature	Significance of Impact without Mitigation	Mitigation	Significance of Residual Impacts
	Potential loss of life through accidental entrapment in construction setting.			construction surveys to determine the activity levels of the potentially inactive Badger sett and Otter holt.	
Otter	Disturbance to potential inactive holt, foraging and commuting activities within the vicinity of the site. Potential loss of life through accidental entrapment in construction setting.	International	Low impact: Moderate significance		Negligible significance
Dry meadows and grassy verges	Large scale loss of total habitat on-site.	Low Local	High impact: Minor significance	Strict adherence to: The enhancing landscape plan in Section 6.2.1, which ensures the partial replacement of diverse grassland cover on-site.	Minor significance during construction and then neutral during operation. Planting with native grassland species will enhance habitats for terrestrial mammals, bats, birds and pollinators.
Scrub		High Local	High impact: Minor significance	Strict adherence to: The mitigations outlined in Section 6.1.5 pertaining to the timing of clearance, to avoid impacts on breeding birds. The enhancing landscape plan in Section 6.2.1, which ensures the replacement of tree canopy and shrub species cover on-site.	Minor significance during construction and then neutral during operation. Planting with native tree and shrub species will enhance habitats for terrestrial mammals, bats, birds and pollinators.
Immature woodland		High Local	High impact: Minor significance		
Hedgehog; Pygmy Shrew; and Irish Hare	Disturbance to foraging, denning and commuting activities within the vicinity of the site.	High Local	Low impact: Negligible significance	Strict adherence to: The mitigations outlined in Section 6.1.6 pertaining to the accidental entrapment of mammal species, as	Negligible significance during construction and then neutral during operation. Planting with native tree, shrub and

Ecological Features	Impacts	Importance of Feature	Significance of Impact without Mitigation	Mitigation	Significance of Residual Impacts
	Potential loss of life through accidental entrapment in construction setting.			well as the general disturbance of nocturnal animals, i.e. Hedgehog. The biodiversity enhancing landscape plan in Section 6.2.1, which ensures landscape connectivity, denning opportunities and foraging grounds for these species.	grassland species will enhance habitats for terrestrial mammals.
Bats	Disturbance to foraging and commuting activities within the vicinity of the site.	International	Low impact: Moderate significance	Strict adherence to: The lighting design mitigations in Section 6.2.2, ensuring no disturbance to local bat activity in the vicinity of the development. The enhancing landscape plan in Section 6.2.1 and 6.2.3, which ensures landscape connectivity, roosting opportunities and foraging grounds for these species.	Minor significance during construction and then negligible during operation. Planting with native tree species will enhance foraging habitats for bats.
Breeding birds	Loss of nesting habitat Disturbance to foraging and commuting activities within the vicinity of the site.	High Local	Medium impact: Minor significance	Strict adherence to: The mitigations outlined in Section 6.1.5 pertaining to the timing of clearance, to avoid impacts on breeding birds. The enhancing landscape plan in Section 6.2.1, which ensures landscape connectivity, nesting opportunities and foraging grounds for these species.	Negligible significance during construction and then neutral during operation. Planting with native tree and shrub species will enhance nesting and foraging habitats for birds.

9 Conclusion

The construction and operation of this proposed development has been shown to potentially impact a number of different habitats with county (eroding / upland rivers - Camac tributary) and local importance (stone walls and other stonework, dry meadows and grassy verges, scrub and immature woodland) and faunal groups (Otter; Badger; Hedgehog; Pygmy Shrew; Irish Hare; Bats; Breeding birds; Common Frog; European Eel; River Lamprey; and White-clawed Crayfish), who's ecological importance ranges from local to international.

Based upon the information supplied regarding the site layout, drainage, landscaping; and provided that the warehouse 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:

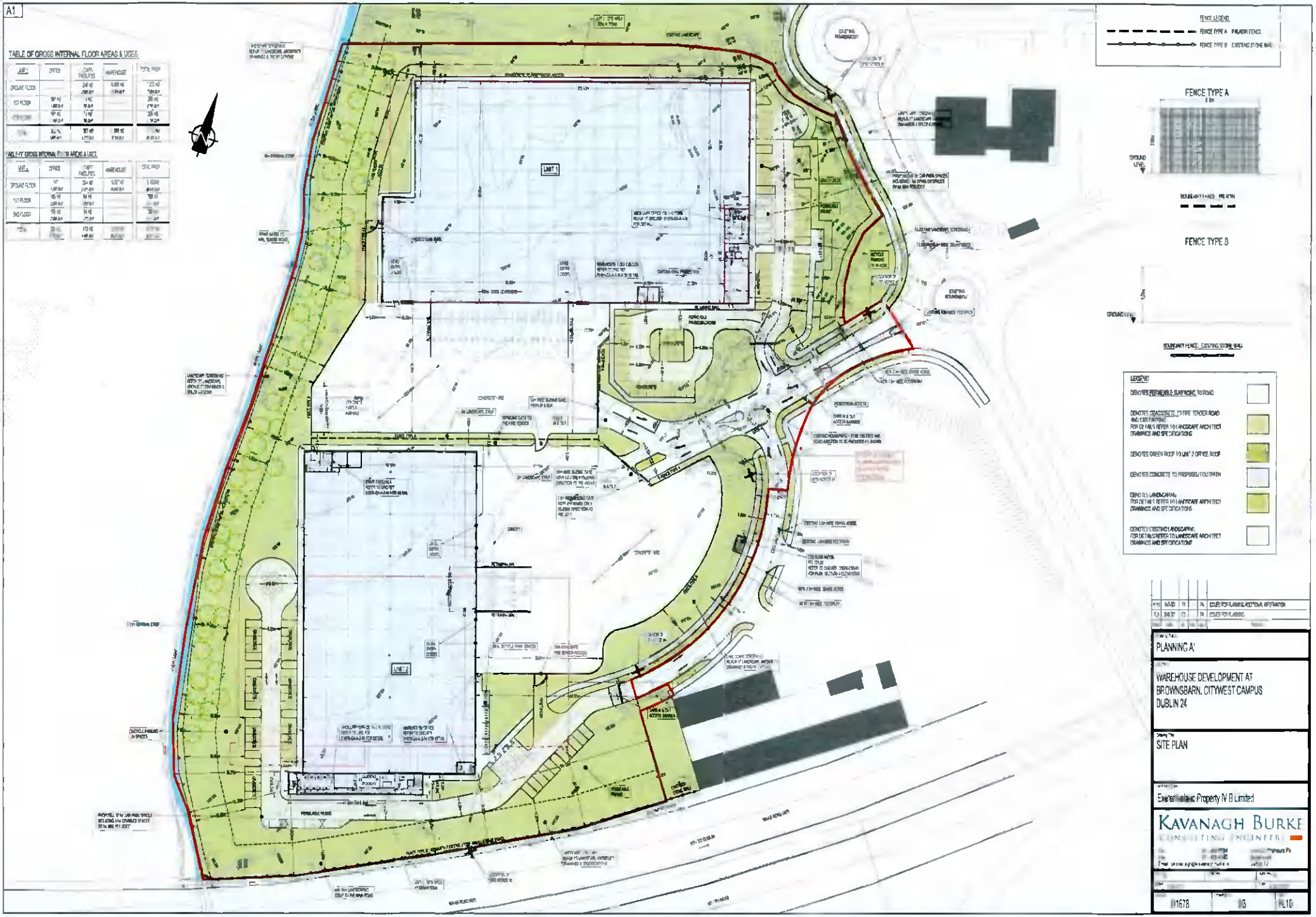
- Rye Water Valley/Carton SAC [001398]
- Glenasmole Valley SAC [001209]
- Red Bog, Kildare SAC [000397]
- Wicklow Mountains SAC [002122]
- Poulaphouca Reservoir SPA [004063]
- Wicklow Mountains SPA [004040]
- North Dublin Bay SAC [000206]
- South Dublin Bay SAC [000210]
- North Bull Island SPA [004006]
- South Dublin Bay and River Tolka Estuary SPA [004024]
- Slade Of Saggart And Crookling Glen pNHA [000211]
- Grand Canal pNHA [002104]
- Lugmore Glen pNHA [001212]
- Kilteel Wood pNHA [001394]
- Glenasmole Valley pNHA [001209]
- Liffey Valley pNHA [000128]
- Dodder Valley pNHA [000991]
- Rye Water Valley / Carton pNHA [001398]
- Royal Canal pNHA [002103]

Furthermore, the substantial remedial / supplementary tree, shrub and wildflower planting /sowing within the proposed development, outlined by the landscape plan, has ensured that negligible - minor residual impacts (as a result of the construction phase) will be downgraded to neutral - negligible residual impact levels for six of the effected ecological features.

In conclusion, the temporary impacts on the local habitats and species will be offset by the proposed long-term, operational mitigation measures, including dark corridors and bat boxes for local bat species; enhancement measures of additional planting to safeguard the function of the existing wildlife corridor; and sections of wildflower meadows to improve existing habitats for all species. These measures will have an overall neutral-negligible residual impact that will become positive - neutral over time.

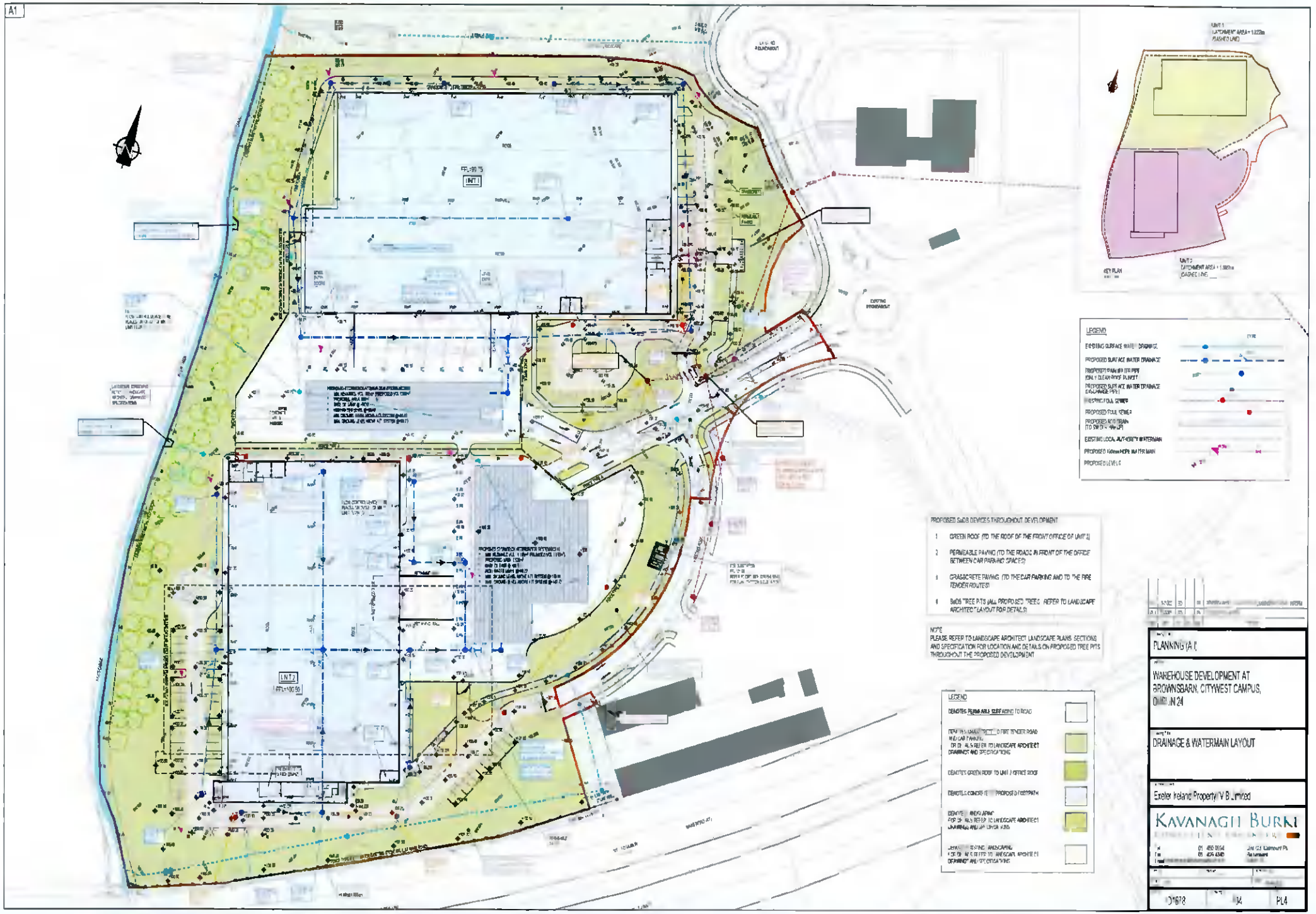
Appendices

A Site Layout Plan


A1
TABLE OF GROSS INTERNAL FLOOR AREAS & USES
UNIT 1
UNIT 2
FENCE LEGEND
FENCE TYPE A PALISADE FENCE
FENCE TYPE B EXISTING STONE WALL
FENCE TYPE A
FENCE TYPE B
LEGEND
DENOTES PERMEABLE SURFACING TO ROAD
DENOTES GRASSCRETE TO FIRE TENDER ROAD AND CAR PARKING
DENOTES GREEN ROOF TO UNIT 2 OFFICE ROOF
DENOTES CONCRETE TO PROPOSED FOOTPATH
DENOTES LANDSCAPING
DENOTES EXISTING LANDSCAPING
PLANNING A'
WAREHOUSE DEVELOPMENT AT BROWNSBARN, CITYWEST CAMPUS DUBLIN 24
SITE PLAN
Exeter Ireland Property IV B Limited
KAVANAGH BURKE
CONSULTING ENGINEERS
11678
03
L10

Appendices

B Site Drainage Plan


A1
UNIT 1
UNIT 2
KEY PLAN
LEGEND
PROPOSED SuDS DEVICES THROUGHOUT DEVELOPMENT
1 GREEN ROOF (TO THE ROOF OF THE FRONT OFFICE OF UNIT 1)
2 PERMEABLE PAVING (TO THE ROAD IN FRONT OF THE OFFICE BETWEEN CAR PARKING SPACES)
3 GRASSCRETE PAVING (TO THE CAR PARKING AND TO THE FIRE TENDER ROUTES)
4 SuDS TREE PITS (ALL PROPOSED TREES - REFER TO LANDSCAPE ARCHITECT LAYOUT FOR DETAILS)
NOTE
PLEASE REFER TO LANDSCAPE ARCHITECT LANDSCAPE PLANS, SECTIONS AND SPECIFICATION FOR LOCATION AND DETAILS ON PROPOSED TREE PITS THROUGHOUT THE PROPOSED DEVELOPMENT
LEGEND
PLANNING (A.I.)
WAREHOUSE DEVELOPMENT AT BROWNSBARN, CITYWEST CAMPUS, DUBLIN 24
DRAINAGE & WATERMAIN LAYOUT
Exeter Ireland Property IV B Limited
KAVANAGH BURKE
PL4

C Landscape Masterplan

Typical Tree pit detail Scale 1 50 @ A1

Landscape Strategy

The landscape strategy for Brownsbarn Site

1. Regarding RFI Item3, along the western boundary, the 10m buffer zone has been increased to provide a buffer of between 15 1m and 25m No tree removal required from the development More planting has been added along the western boundary to supplement existing planting and enhance the biodiversity
2. Regarding RFI Item 5, a green roof has been added following the relevant recommendations (See Landscape Masterplan, Drawing No ENG JABI XX XX DR L 0002) The Masterplan and Planting Plan show increased planting along the southern boundary of site, the planting will be decreasing toward the protected structure The Landscape Masterplan also shows permeable paving (grass crete) throughout the site, with tree planting between the car parking space
3. A tree pit detail has been added into the carpark design which adjacent to hard standing surfaces, this will allow incorporated SuDS
4. Tree planting along the N7 has been kept close to the proposed buildings to allow for maximum retention of views from the N7 towards the *Specialized Ireland* while enhancing screening of the proposed building and provision of habitat

Brownsbarn Site N7 Landscape Design

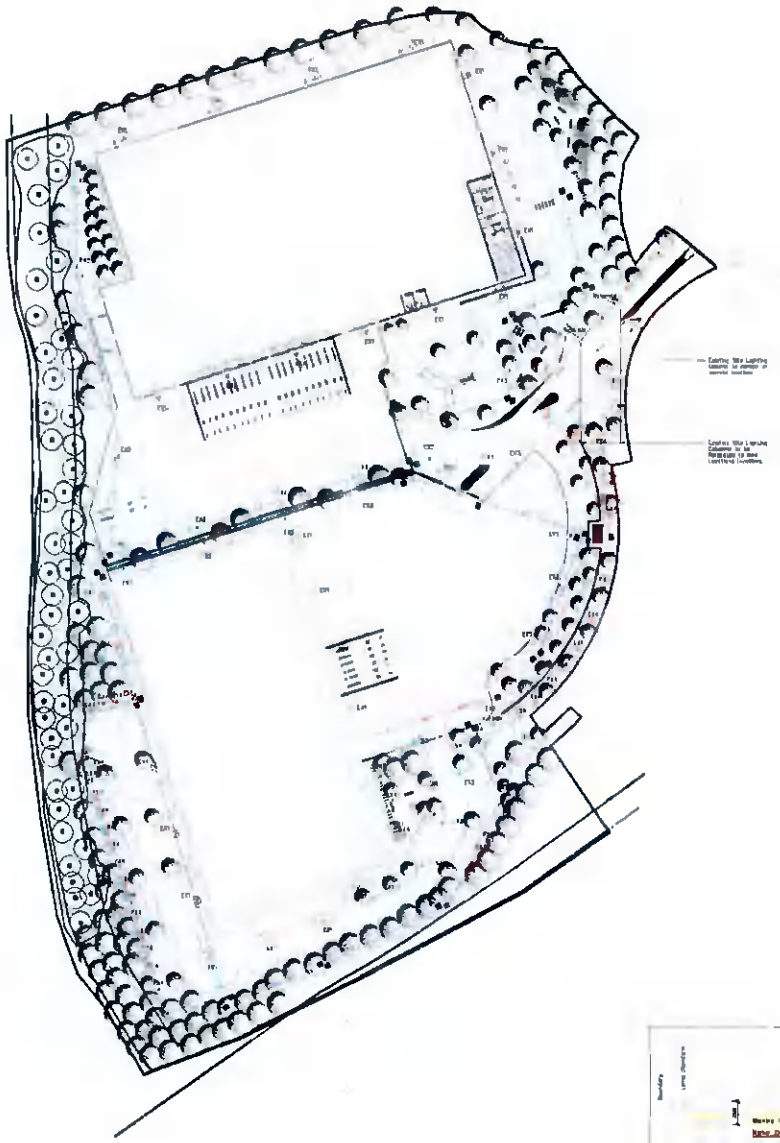
anoscape Masterplan

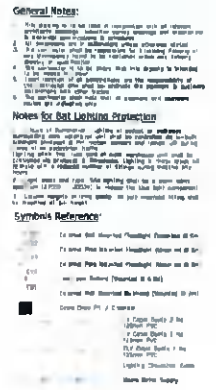
for

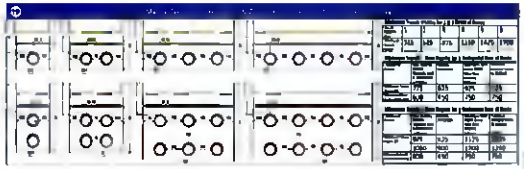
Exeter Ireland Property Limited

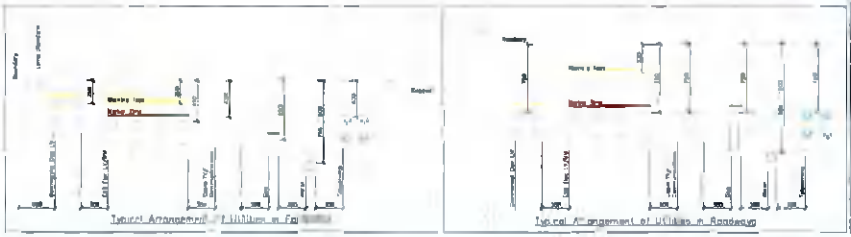
Appendices

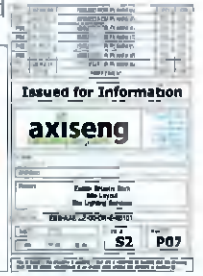
D Site Lighting Plan











Site Lighting

E Relevant Policy and Legislation

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

E 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.

E.2 Designated Sites and Nature Conservation

E.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

E 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.

E 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.

E 2 4 Birds

Almost all resident wild birds are protected under the 1976 Wildlife Act (and amendments) This makes it an offence to:

- intentionally take, damage or destroy the nest of any wild bird whilst it is in use or being built
- take, destroy or possess the egg of any wild bird

E 2 5 Badger

Badgers are protected under the 1976 Wildlife Act (and amendments) and it is illegal to intentionally kill, capture, injure or ill-treat any Badger. It is also an offence to obstruct, destroy or damage a Badger sett or disturb Badgers within a sett. Disturbance is defined, for development purposes, as any activity that could damage a sett or be greater than what Badgers commonly tolerate.

E 2 6 Bats

All Irish bat species are European Protected Species (EPS), protected under the Wildlife Act (and amendments) and the Conservation of Habitat and Species Regulations 2017 (as amended). This makes it an offence to:

- deliberately capture, injure or kill a bat
- intentionally or recklessly disturb a bat in its roost or deliberately disturb a group of bats
- damage or destroy a bat roosting place (even if bats are not occupying the roost at the time)
- intentionally or recklessly obstruct access to a bat roost.

E 2 7 Otter

The European Otter is an EPS protected under the Conservation of Habitats and Species Regulations 2017 (as amended), making it an offence to:

- deliberately capture, injure or kill an Otter
- deliberately disturb an Otter such as to affect local populations or breeding success
- damage or destroy an Otter holt, possess or transport an Otter or any part of an Otter
- sell or exchange an Otter.
- Otters also receive protection under the Wildlife Act (and amendments), this makes it an offence to:
- intentionally or recklessly disturb any Otter whilst within a holt
- intentionally or recklessly obstruct access to a holt.

E 2 8 Reptiles and Amphibians

Common Frog Rana temporaria, Natterjack Toad. *Bufo calamita*, Smooth Newt *Triturus vulgaris* and Common Lizard *Zootoca vivipara* are all protected under the Wildlife Act 1976 (and amendments).

E 2 9 Invasive Non-native Species

Certain invasive non-native animals and plants are listed under the Third Schedule of S.I. No. 477/2011 - European Communities (Birds and Natural Habitats) Regulations 2011. This makes it an offence to release, plant them in the wild or cause them to disperse, spread or otherwise cause them to grow. If these species occur on a site proposed for development or other work which may disturb the ground, control of these species is likely to be required.

European Council's Regulation on the prevention and management of the introduction and spread of invasive alien species [1143/2014] sets out to prevent, minimise and mitigate the adverse impacts of the introduction and spread, both intentional and unintentional, of invasive alien species on biodiversity and the related ecosystem services as well as on human health and the economy.

F National Biodiversity Data Centre (2021); Bat Report (JBA, 2019; 2020); IFI Reports (2011; 2018)

F.1 Recent records (within 10 years) of protected species within the 10km of the site

Common Name	Latin Name	Designation	Record Date
		Mammals	
Eurasian Otter	*Lutra lutra*	EU Habitats Directive: Annex II & IV Wildlife Act 1976 & Amendments	18/10/2018
European Badger	*Meles meles*	Wildlife Act 1976 & Amendments	28/09/2018
European Hedgehog	*Erinaceus europaeus*	Wildlife Act 1976 & Amendments	16/08/2018
Pine Marten	*Martes martes*	EU Habitats Directive: Annex V Wildlife Act 1976 & Amendments	23/09/2017
Red Deer	*Cervus elaphus*	Wildlife Act 1976 & Amendments	09/11/2015
Pygmy Shrew	*Sorex minutus*	Wildlife Act 1976 & Amendments)	12/07/2018
Daubenton's Bat	*Myotis daubentonii*	EU Habitats Directive: Annex IV Wildlife Act 1976 & Amendments	05/09/2014
Natterer's Bat	*Myotis nattereri*	EU Habitats Directive: Annex IV Wildlife Act 1976 & Amendments	14/09/2011
Brown Long-eared Bat	*Plecotus auritus*	EU Habitats Directive: Annex IV Wildlife Act 1976 & Amendments	05/07/2012
Whiskered Bat	*Myotis mystacinus*	EU Habitats Directive: Annex IV Wildlife Act 1976 & Amendments	29/09/2020 (JBA, 2020)
Leisler's Bat	*Nyctalus leisleri*	EU Habitats Directive: Annex IV Wildlife Act 1976 & Amendments	19/09/2020 (JBA, 2019)
Common Pipistrelle	*Pipistrellus pipistrellus*	EU Habitats Directive: Annex IV Wildlife Act 1976 & Amendments	19/09/2020 (JBA, 2019)
Soprano Pipistrelle	*Pipistrellus pygmaeus*	EU Habitats Directive: Annex IV Wildlife Act 1976 & Amendments	19/09/2020 (JBA, 2019)
Irish Hare	*Lepus timidus subsp. hibernicus*	EU Habitats Directive: Annex V Wildlife Act 1976 & Amendments	18/12/2018
Red Squirrel	*Sciurus vulgaris*	Wildlife Act 1976 & Amendments	26/12/2018
Stoat	*Mustela erminea*	Wildlife Act 1976 & Amendments	09/09/2018
		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
Meadow Pipit	*Anthus pratensis*	Birds of Conservation Concern in Ireland: Red List	31/12/2011
Common Snipe	*Gallinago gallinago*	EU Birds Directive >> Annex II & III Birds of Conservation Concern in Ireland: Amber List	28/01/2017
Jack Snipe	*Lymnocryptes minimus*	EU Birds Directive >> Annex II & III Birds of Conservation Concern in Ireland: Amber List	31/12/2011

Appendices

Common Name	Latin Name	Designation	Record Date
Merlin	*Falco columbarius*	EU Birds Directive >> Annex I Birds of Conservation Concern in Ireland: Amber List	09/03/2014
Red Kite	*Milvus milvus*	Birds of Conservation Concern in Ireland: Amber List	07/07/2017
Brent Goose	*Branta bernicla hrota*	Birds of Conservation Concern in Ireland: Amber List	06/12/2015
Rock Pigeon	*Columba livia*	EU Birds Directive >> Annex II	13/01/2017
Northern Lapwing	*Vanellus vanellus*	EU Birds Directive >> Annex II Birds of Conservation Concern in Ireland: Red List	21/12/2016
Eurasian Curlew	*Numenius arquata*	EU Birds Directive >> Annex II Birds of Conservation Concern in Ireland: Red List	26/12/2016
Common Kestrel	*Falco tinnunculus*	Birds of Conservation Concern in Ireland: Amber List	27/11/2014
Common Redshank	*Tringa totanus*	Birds of Conservation Concern in Ireland: Red List	31/12/2011
Little Egret	*Egretta garzetta*	EU Birds Directive >> Annex I	11/12/2017
European Golden Plover	*Pluvalis apricaria*	EU Birds Directive >> Annex I, II & III Birds of Conservation Concern in Ireland: Red List	31/12/2011
Common Coot	*Fulica atra*	EU Birds Directive >> Annex II & III Birds of Conservation Concern in Ireland: Amber List	20/11/2017
Barn Owl	*Tyto alba*	Birds of Conservation Concern in Ireland: Red List	29/04/2014
Common Kingfisher	*Alcedo atthis*	EU Birds Directive >> Annex I Birds of Conservation Concern in Ireland: Amber List	03/09/2017
Little Grebe	*Tachybaptus ruficollis*	Birds of Conservation Concern in Ireland: Amber List	11/06/2017
Mallard	*Anas platyrhynchos*	EU Birds Directive >> Annex II & III	20/11/2017
Common Pheasant	*Phasianus colchicus*	EU Birds Directive >> Annex II & III	23/03/2016
Common Linnet	*Linaria cannabina*	Birds of Conservation Concern in Ireland: Amber List	18/05/2015
Common 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	26/02/2017
Eurasian Oystercatcher	*Haematopus ostralegus*	Birds of Conservation Concern in Ireland: Amber List	31/12/2011
Common Starling	*Sturnus vulgaris*	Birds of Conservation Concern in Ireland: Amber List	10/11/2017
Herring Gull	*Larus argentatus*	Birds of Conservation Concern in Ireland: Red List	20/11/2017
Mute Swan	*Cygnus olor*	Birds of Conservation Concern in Ireland: Amber List	20/11/2017
Black-headed Gull	*Chroicocephalus ridibundus*	Birds of Conservation Concern in Ireland: Red List	08/12/2017
Northern Pintail	*Anas acuta*	EU Birds Directive >> Annex II & III	31/12/2011

Common Name	Latin Name	Designation	Record Date
		Birds of Conservation Concern in Ireland: Red List	
Tufted Duck	*Aythya fuligula*	EU Birds Directive >> Annex II & III Birds of Conservation Concern in Ireland: Red List	20/11/2017
Eurasian Woodcock	*Scolopax rusticola*	EU Birds Directive >> Annex II & III Birds of Conservation Concern in Ireland: Amber List	31/12/2011
Grey Wagtail	*Motacilla cinerea*	Birds of Conservation Concern in Ireland: Red List	07/10/2017
Barn Swallow	*Hirundo rustica*	Birds of Conservation Concern in Ireland: Amber List	16/09/2017
Bar-tailed Godwit	*Limosa lapponica*	EU Birds Directive >> Annex I Birds of Conservation Concern in Ireland: Amber List	31/12/2011
Black-tailed Godwit	*Limosa limosa)*	Birds of Conservation Concern in Ireland: Amber List	31/12/2011
Black Guillemot	*Cepphus grylle*	Birds of Conservation Concern in Ireland: Amber List	31/12/2011
Common Eider	*Somateria mollissima*	EU Birds Directive >> Annex II & III Birds of Conservation Concern in Ireland: Amber List	18/05/2015
Common Goldeneye	*Bucephala clangula*	EU Birds Directive >> Annex II Birds of Conservation Concern in Ireland: Red List	18/05/2015
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	11/06/2017
Eurasian 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	04/06/2017
Greylag Goose	*Anser anser*	EU Birds Directive >> Annex II & III Birds of Conservation Concern in Ireland: Amber List	31/12/2011
Northern Shoveler	*Anas clypeata*	EU Birds Directive >> Annex II & III Birds of Conservation Concern in Ireland: Red List	31/12/2011
Great Cormorant	*Phalacrocorax carbo*	Birds of Conservation Concern in Ireland: Amber List	01/09/2017
Northern Wheatear	*Oenanthe oenanthe*	Birds of Conservation Concern in Ireland: Amber List	13/09/2015
Sand Martin	*Riparia riparia*	Birds of Conservation Concern in Ireland: Amber List	07/05/2016
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
Dunlin	*Calidris alpina*	EU Birds Directive >> Annex I Birds of Conservation Concern in Ireland: Red List	31/12/2011

Appendices

Common Name	Latin Name	Designation	Record Date
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	05/03/2014
Great Northern Diver	*Gavia immer*	EU Birds Directive >> Annex I	31/12/2011
Hen Harrier	*Circus cyaneus*	EU Birds Directive >> Annex I 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	28/03/2013
Red Grouse	*Lagopus lagopus*	EU Birds Directive >> Annex II & III Birds of Conservation Concern in Ireland: Red List	13/09/2015
Goosander	*Mergus merganser*	EU Birds Directive >> Annex II Birds of Conservation Concern in Ireland: Amber List	31/12/2011
Whinchat	*Saxicola rubetra*	Birds of Conservation Concern in Ireland: Red List	31/12/2011
Great Stopped Woodpecker	*Dendrocopos major*	Birds of Conservation Concern in Ireland: Amber List	19/05/2012
Greenland White-fronted Goose	*Anser albifrons*	EU Birds Directive>> Annex I, II & III Birds of Conservation Concern in Ireland: Amber List	31/12/2011
		Reptiles	
Common Lizard	*Zootoca vivipara*	Wildlife Act 1976 & Amendments	26/08/2020
		Amphibians	
Common Frog	*Rana temporaria*	EU Habitats Directive >> Annex V Wildlife Act 1976 & Amendments	12/07/2020
Smooth Newt	*Lissotriton vulgaris*	Wildlife Act 1976 & Amendments	29/06/2020
		Fish	
European Eel	*Anguilla anguilla*	OSPAR Convention Red Status: Critically Endangered	20/05/2011
River Lamprey	*Lampetra fluviatilis*	EU Habitats Directive: Annex II & V	05/09/2017 (IFI, 2017)
Atlantic Salmon	*Salmo salar*	OSPAR Convention Red Status: Vulnerable EU Habitats Directive: Annex II & V	xx/xx/2020 (IFI, 2011)
		Invertebrates	
White-clawed Crayfish	*Austropotamobius pallipes*	EU Habitats Directive: Annex II & V Wildlife Act 1976 & Amendments	02/09/2016
Small Heath	*Coenonympha pamphilus*	Irish Red List: Near Threatened	02/06/2020
Gooden's Nomad Bee	*Nomada goodeniana*	Irish Red List: Endangered	13/05/2020
Large Red-Tailed Bumble Bee	*Bombus (Melanobombus) lapidarius*	Irish Red List: Near Threatened	15/08/2020

Common Name	Latin Name	Designation	Record Date
Willughby's Leaf-cutter Bee	*Megachile (Delomegachile) willughbiella*	Irish Red List: Near Threatened	01/08/2019
Moss Carder-bee	*Bombus (Thoracombus) muscorum*	Irish Red List: Near Threatened	02/08/2019
Field Cuckoo Bee	*Bombus (Psithyrus) campestris*	Irish Red List: Vulnerable	20/07/2018
-	*Andrena (Melandrena) nigroaenea*	Irish Red List: Vulnerable	21/04/2019
Ear Pond Snail	*Radix auricularia*	Threatened Species: Vulnerable	21/05/2011
English Chrysalis Snail	*Leiostyla (Leiostyla) anglica*	Threatened Species: Vulnerable	18/05/2012
Common Whorl Snail	*Vertigo (Vertigo) pygmaea*	Irish Red List: Near Threatened	21/05/2011
Common Oyster	*Ostrea edulis*	Threatened Species: OSPAR Convention	21/05/2011
Duck Mussel	*Anodonta (Anodonta) anatina*	Irish Red List: Near Threatened	21/05/2011
Lake Orb Mussel	*Musculium lacustre*	Threatened Species: Vulnerable	18/05/2012
	Flora		
Blue Fleabane	*Erigeron acer*	Threatened Species: Endangered	26/07/2017
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	20/04/2020
Alpine Clubmoss	*Diphasiastrum alpinum*	EU Habitats Directive: Annex V	05/05/2018
Fir Clubmoss	*Huperzia selago*	EU Habitats Directive: Annex V	05/05/2018
Betony	*Stachys officinalis*	Threatened Species: Endangered	18/05/2012
Bog Orchid	*Hammarbya paludosa*	Threatened Species: Vulnerable	02/09/2011
Hairy Violet	*Viola hirta*	Threatened Species: Endangered	18/05/2012
Wood Bitter-vetch	*Vicia orobus*	Threatened Species: Endangered	30/05/2017
Hook-beak Tufa-moss	*Hymenostylium recurvirostrum*	Threatened Species: Near Threatened	23/02/2012

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