Boden Villas, Taylors Lane, Ballyboden, Co. Dublin

Ecological Impact Assessment

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Darragh Lynch Architects

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Revision History

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S3-P01 / 12-01-2022	Draft Report	Darragh Lynch Architects
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Contract

This report describes work commissioned by Darragh Lynch Architects by an email dated 12/10/2021. William Mulville of JBA Consulting conducted this work.

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

..... Ecologist

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

..... Senior Ecologist

Purpose

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Abbreviations

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

1 Introduction

JBA Consulting Ireland Ltd. has been commissioned by Darragh Lynch Architects to undertake an Ecological Impact Assessment (EcIA) in relation to a proposed development at Boden Villas, Taylors Lane, Ballyboden, Co. Dublin.

1.1 Aims

The aims of this EcIA are to:

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

1.2 Site location

The proposed residential development is located along Taylors Lane and Palmers Park within the Ballyboden area of Dublin (Figure 1-1). The site is bordered by residential properties and their associated roadways and footpaths. Along the southern border of the site, a tributary of the Whitechurch Stream flows in an easterly direction.

Figure 1-1: Site location and local watercourses (ESRI: Satellite, 2022; OSM 2022)

2 Project Description

2.1 Proposed project

The proposed development will consist of:

- a new dwelling;
- entrance;
- and all associated site works to the rear

The Site Layout Plan can be view in Appendix A.

2.1 1 Water Supply and Drainage

The water supply to the proposed development will be provided through the existing local water mains systems.

The proposed surface water drainage system incorporates a series of new silt traps and an attenuation system, which then connects to the existing local surface water drainage network. A Sustainable Drainage System (SuDS), namely green roof system, will be incorporated into the residential building, helping to control the rate of rainfall runoff on-site (Figure 2-1).

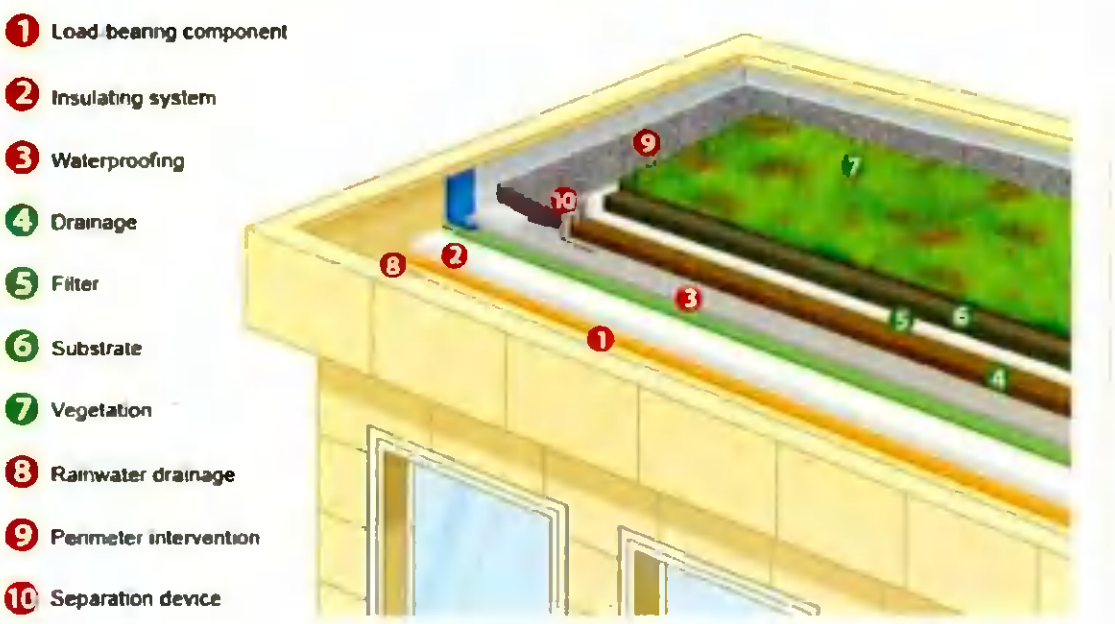


Figure 2-1: Basic green roof concept drawing (Vegitalid.com)

The foul water drainage of the proposed site will connect with the existing foul water drainage system within the residential Ballyboden area. Ultimately, the foul waste is treated at the Ringsend WWTP [D0034-01] which services the greater Dublin area.

The Site Drainage Plan can be view in Appendix B.

2.1.2 Tree Removal

One semi-mature tree is set to be removed from the centre of the site.

2.1.3 Landscape Design

The landscaping for the development includes a 10m riparian green strip between the residential structure and the stream. The residential structure will have a green roof remedying the loss of vegetation on-site, as well as acting as an appropriate SuDS.

3 Methodology

3.1 The EcIA Team

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

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

3.2 Policy and Legislation

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

3.3 Methods

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

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

3.4 Guidance

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

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

3.5 Baseline

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

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

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

Other information on the local area was obtained, including:

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

3.5 1 Zone of Influence

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

3.5.2 Field Surveys

A general ecological site walkover, including a habitat mapping survey, was conducted on the 25/11/2021 by William Mulville of JBA Consulting to inform the ecological baseline of the site.

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).

3.6 Water Framework Directive

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

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

Good Ecological Quality will depend on the quality of the individual quality elements on which the Ecological status is scored; namely the biological, chemical and morphological condition in a particular

water body. Any reduction in any of these elements will result in a reduction of the overall ecological status.

3.6 1 Water Framework Status and Objectives

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

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

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

3.7 Screening of Ecological Features

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

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

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

3.8 Assessment of the Effects on Features

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

3.9 Valuation of Receptors

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

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

The valuation of designated sites considers different levels of statutory and non-statutory protection. Assessment of habitat depends on several factors, including the size of the habitat, its conservation status and quality. The assessment also takes account of connected off-site habitat that may increase

the value of the on-site habitat through association. Valuation of species depends on a number of factors including distribution, status, rarity, vulnerability, and the population size present.

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

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

Level of Value	Examples of Criteria
International	An internationally important site e.g. Special Protection Area (SPA), Special Area of Conservation (SAC), Ramsar (or a site considered worthy of such designation). A regularly occurring substantial population of an internationally important species (listed on Annex IV of the Habitats Directive). Designated shellfish waters. Major fisheries area.
National	A nationally designated site e.g. Natural Heritage Area (NHA), a proposed Natural Heritage Area (pNHA), statutory Nature Reserve, or a site considered worthy of such designation. A viable area of a habitat type listed in Annex I of the Habitats Directive or of smaller areas of such habitat which are essential to maintain the viability of a larger whole. A regularly occurring substantial population of a nationally important species, e.g. listed on The Wildlife Act 1976 or The Wildlife (Amendment) Act 2000. A species included in the Irish Red Data Lists/Books. Significant populations of breeding birds.
Regional/County (County Dublin)	Species and habitats of special conservation significance within County Dublin 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 Biodiversity Action Plan (BAP), if this has been prepared Resident or regularly occurring populations (assessed to be important at the Local level) of the following: *Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; *Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;

Level of Value	Examples of Criteria
	*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

3.9.1 Magnitude of Impacts

Ecological effects or impacts can be described and categorised in a number of ways. Examples of relevant terms are listed in the table below.

Table 3-3: Categories of Effects (derived EPA, 2017).

Effects	Categories of effects
Quality of Effects	**Positive Effects** A change which improves the quality of the environment (for example, by increasing species diversity; or the improving reproductive capacity of an ecosystem, or by removing nuisances or improving amenities).
	Neutral Effects No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error
	Negative/adverse Effects A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem; or damaging health or property or by causing nuisance).
Probability of Effects	**Likely Effects** The effects that can reasonably be expected to occur because of the planned project if all mitigation measures are properly implemented.
	Unlikely Effects The effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented.
Duration and Frequency of Effects	**Temporary Effects** Effects lasting less than a year
	Short-term Effects Effects lasting one to seven years
	Medium-term Effects Effects lasting seven to fifteen years
	Long-term Effects Effects lasting fifteen to sixty years.
Types of Effects	**Indirect Effects** (a.k.a. Secondary Effects) Impacts on the environment, which are not a direct result of the project, often produced away from the project site or

because of a complex pathway.

Cumulative Effects
The addition of many minor or significant effects, including effects of other projects, to create larger, more significant effects.

'Do-Nothing Effects'
The environment as it would be in the future should the subject project not be carried out.

'Worst case' Effects
The effects arising from a project in the case where mitigation measures substantially fail.

Residual Effects
The degree of environmental change that will occur after the proposed mitigation measures have taken effect.

Synergistic Effects
Where the resultant effect 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 3-4.

Table 3-4: 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.

3.9.2 Significance of impacts

The significance of an impact is a product of the value of the ecological feature and the magnitude of the impact on it, moderated by professional judgement. Table 3-5 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 3-5: Significance of impacts matrix.

Value of feature	Magnitude of impact			
	High	Medium	Low	Negligible
International	Major	Major	Moderate	Neutral
National	Major	Moderate	Minor	Neutral

Regional / County	Moderate	Minor	Minor	Neutral
Local	Minor	Minor	Negligible	Neutral
Less than local	Negligible	Negligible	Negligible	Neutral

3.9.3 Residual Impacts

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

3.10 Cumulative Impacts

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

3.11 Limitations and Constraints

This EclA 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:

- 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. However, the site surveys have followed CIEEM (2019) Advice note on the lifespan of ecological reports and surveys.
- 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.
- Floral species identification was limited given the timing (November) of the ecological walkover survey.
- 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 visit conducted on the 25/11/2021.

4.1 Desk-based Assessment

Designated Sites

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

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

Name	Designation	Importance	Distance from site	Hydrological distance rom site
North Dublin Bay	SAC	International	11.8km	16.4km
South Dublin Bay	SAC	International	7.1km	17.5km
North Bull Island	SPA	International	11.8km	16.4km
South Dublin Bay and River Tolka Estuary	SPA	International	7.0km	13.7km
Wicklow Mountains	SAC	International	4.6km	n/a
Wicklow Mountains	SPA	International	4.7km	n/a
Dodder Valley	pNHA	National	2.6km	n/a
Fitzsimon's Wood	pNHA	National	3.9km	n/a
Dolphins, Dublin Docks	pNHA	National	9.2km	13.7km
North Dublin Bay	pNHA	National	9.3km	15.0km
South Dublin Bay	pNHA	National	7.0km	17.5km

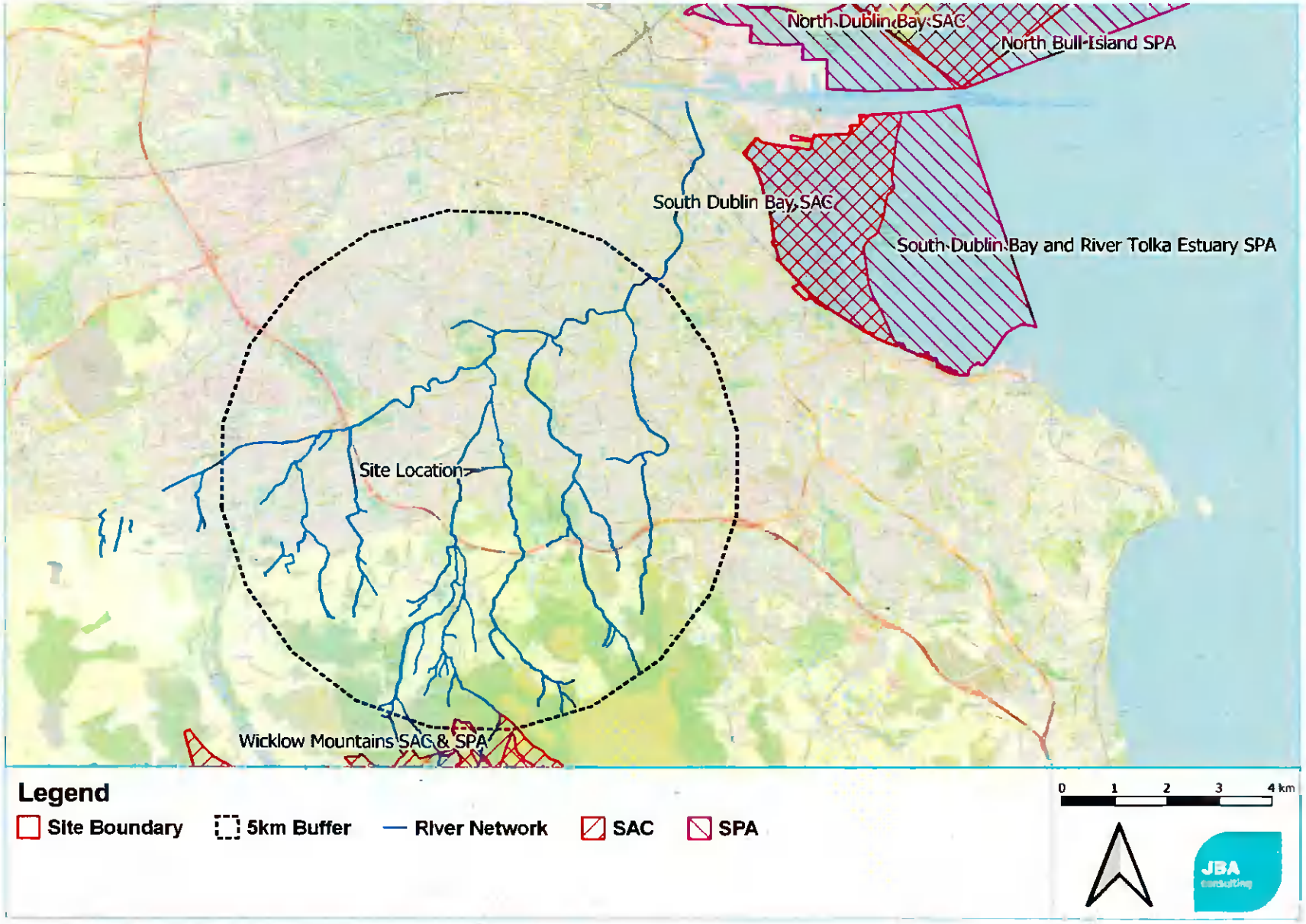


Figure 4-1: Statutory designated sites within the ZoI of the development (OSM, 2022)

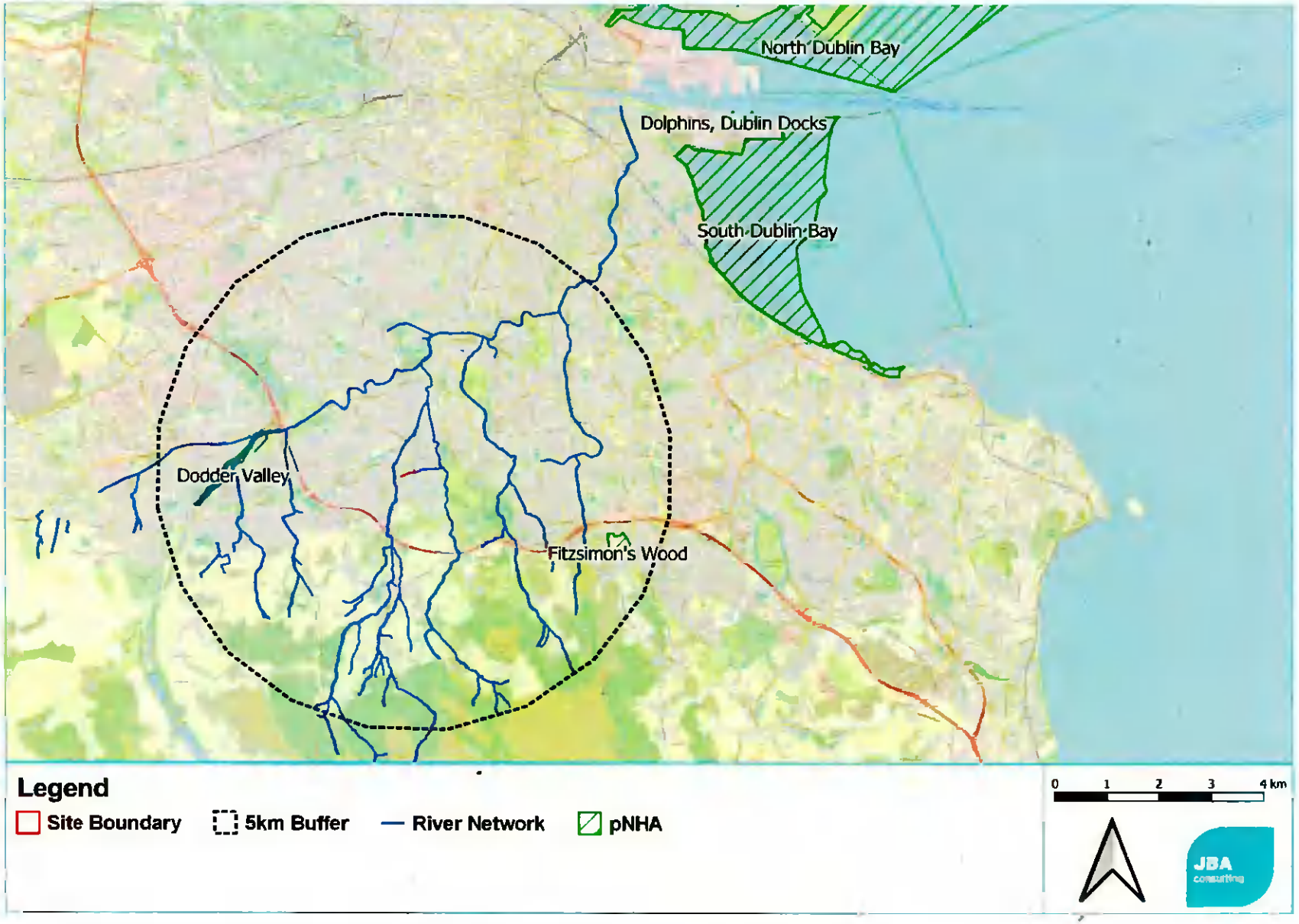


Figure 4-2: Non-statutory designated sites within their respective ZoI of the site works (OSM, 2022)

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

Site Name	Brief	Qualifying Interests	Project-relevant Threats: Impact (Source)
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, 2020a).	- 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)	**Discharges:** High impact (inside) **Diffuse pollution to surface waters due to other sources not listed:** Medium impact (inside) **Urbanised areas, human habitation:** High impact (outside) **Intensive maintenance of public parks / cleaning of beaches:** Low impact (inside)# **Other point source pollution to surface water:** High impact (inside) (NPWS, 2020a)
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 noltii*) on the east coast (NPWS, 2020b).	- 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) **Discharges:** Moderate impact (both) **Marine water pollution:** Medium impact (both) (NPWS, 2020b)
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.	- Light-bellied Brent Goose *Branta bernicla hrota* [A046] - Common Shelduck *Tadorna tadorna* [A048] - Eurasian Teal *Anas crecca* [A052]	**Continuous urbanisation:** Medium impact (outside)

Site Name	Brief	Qualifying Interests	Project-relevant Threats: Impact (Source)
	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, 2020c).	- Northern Pintail *Anas acuta* [A054] - Northern Shoveler *Anas clypeata* [A056] - Eurasian Oystercatcher *Haematopus ostralegus* [A130] - European 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] - Eurasian Curlew *Numenius arquata* [A160] - Common Redshank *Tringa totanus* [A162] - Ruddy Turnstone *Arenaria interpres* [A169] - Black-headed Gull *Chroicocephalus ridibundus* [A179] - Wetland and Waterbirds [A999] (NPWS, 2015a)	**Discharges:** Medium impact (both) (NPWS, 2020c)
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	- Light-bellied Brent Goose *Branta bernicla hrota* [A046] - Eurasian 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] - Common 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)	**Urbanised areas, human habitation:** High impact (outside) **Discharges:** High impact (inside) (NPWS, 2020d)

Site Name	Brief	Qualifying Interests	Project-relevant Threats: Impact (Source)
	times. Is a regular autumn roosting ground for significant numbers of terns, including Roseate Terns, Common Tern and Artic Tern (NPWS, 2020d).		
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 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, 2018).	- 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] - 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, 2017)	**Wildlife watching:** Low impact (inside)# **Trampling, overuse:** Moderate impact (both)# **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, 2018)
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, 2020e).	- Merlin *Falco columbarius* [A098] - Peregrine Falcon *Falco peregrinus* [A103] (NPWS, 2021)	**Walking, horse-riding and non-motorised vehicles:** High impact (inside)# **Paths, tracks, cycling tracks:** Moderate impact (inside)# (Full list of threats / pressures - NPWS, 2020e)

 # = indirect impact via increased human populace within the ZoI

Table 4-3: Site briefs and ecological features of conservation concern of proposed Natural Heritage Areas within the ZoI.

Site Name	Brief	Ecological Features of Conservation Concern
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, 2009).	- Little Grebe *Tachybaptus ruficollis* - Kingfisher *Alcedo atthis* - Grey Wagtail *Motacilla cinerea* - Sand Martin *Riparia riparia* - Otter *Lutra lutra*
Fitzsimon's Wood pNHA	Fitzsimon's Wood occupies an area of approximately 8ha near Lamb's Cross in Sandyford, Co. Dublin. The woodland consists of mature birch *Betula* spp. with some oak *Quercus* spp., together with a well-developed understorey of Holly *Ilex aquifolium*. Natural regeneration is occurring and there is a profuse growth of young birch, Ash *Fraxinus excelsior*, oak and other species. Some marshy areas also occur within the woodland. An area of heath dominated by Gorse *Ulex europaeus* scrub is also included in the site. The underlying rock of the area is granite and where this outcrops it is often covered with ferns and mosses. The basic woodland structure remains intact and as birch woodland is very rare in Co. Dublin, Fitzsimon's Wood continues to be of ecological importance (NPWS, 2009).	- Mature Birch woodland (rare in regional / Dublin context)
Dolphins, Dublin Docks pNHA	As per South Dublin Bay and River Tolka Estuary SPA descriptions in Table 4-2.	As per those outlined in SPA description
North Dublin Bay pNHA	As per North Dublin Bay SAC and South Dublin Bay and River Tolka Estuary SPA descriptions in Table 4-2.	As per those outlined in SAC and SPA descriptions
South Dublin Bay pNHA	As per South Dublin Bay SAC and South Dublin Bay and River Tolka Estuary SPA descriptions in Table 4-2.	As per those outlined in SAC and SPA descriptions

4.1.1 Screening of designated sites

An AA Screening has been carried out for this project by JBA (2022). Following initial screening, and based upon best scientific judgement it is concluded that **adverse significant effects are not anticipated** from the project on the following Natura 2000 sites within the Zone of Influence:

- North Dublin Bay SAC [000206]
- South Dublin Bay SAC [000210]
- North Bull Island SPA [004006]
- South Dublin Bay and River Tolka Estuary SPA [004006]
- Wicklow Mountains SAC [002122]
- Wicklow Mountains SPA [004040]

Given the above conclusion from the AA Screening, **the following pNHA sites will be screened out** given their respective boundary overlap with the Natura 2000 sites:

- Dolphins, Dublin Docks pNHA [000201]
- North Dublin Bay pNHA [000206]
- South Dublin Bay pNHA [000210]

The remaining pNHA sites below, are being **screened out** due to the lack of hydrological connectivity (surface water and groundwater) with the proposed site and the development's scale (capacity for dust generation):

- Dodder Valley pNHA [000991]
- Fitzsimon's Wood pNHA [001753]

4.1.2 Protected Species

National Biodiversity Data Centre (NBDC)

Records of protected flora and fauna including invertebrates, amphibians, fish, birds and mammals collated from the NBDC (2022) database, present within the surrounding 2km within the past 10 years are listed in Appendix D. This list includes their level of protection, if they are red or amber listed on the International Union for the Conservation of Nature and Natural Resources (IUCN) Red List and the date of the last record of this species at this location.

4.1.3 Invasive Non-native Species

The records from the NBDC (2022) database, show that there are three high-impact, invasive non-native species listed on the Third Schedule of Non-native species (subject to restrictions under Regulations 49 and 50) present within the 2km buffer zone of the proposed site within the past 10 years (Table 4-4).

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

Invasive non-native species	Proximity to site
Giant-rhubarb *Gunnera tinctoria*	0.47km
Himalayan Balsam *Impatiens glandulifera*	1.78km
Japanese Knotweed *Reynoutria japonica*	0.57km

4.2 Water Framework Directive

4.2.1 Surface Water Status

The site lies within the Water Framework Directive (WFD) Liffey catchment and the sub-catchments Dodder_SC_010 (EPA, 2022). The current WFD status (2013-2018) of this section of the Whitechurch Stream (OWENADOHER_010), is 'Good'; while its risk status is currently under review.

The proposed development will need to ensure that the goal of 'Good Status' is achievable, and that the proposed works will not hinder this goal during the construction and operational phases.

4.2.2 Groundwater Status

The groundwater body which underlies the proposed site is the Kilcullen groundwater body (IE_EA_G_003). The WFD status for the groundwater body is currently marked as 'Good'; and is currently considered to be 'At Risk' (EPA, 2022). The bedrock underlying the proposed site is comprised of dark slate-schist, quartzite and coticule. 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' (GSI, 2022).

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

4.3 Site Visits

A baseline ecological site walkover, including habitat mapping, was conducted by JBA Ecologist, William Mulville on the 25/11/2021. Habitats and species recorded are presented in detail in the following sections.

4.4 Habitats

The value of each habitat is based on the site visit. Habitats recorded in and around the site boundary were recorded and are displayed in Table 4-5 below and

Figure 4-3 overleaf.

Table 4-5: Habitats recorded during site visit.

Habitat	FossItt Code
Stone walls and other stonework	BL1
Eroding / upland rivers	FW1
Amenity (improved) grassland	GA2
Treelines	WL2
Scrub / Ornamental non-native shrub	WS1 / WS3

Figure 4-3: Habitat Map

4.4.1 Stone walls and other stonework (BL1)

This artificial man-made habitat consists of the boundary walls along the western and eastern boundaries of the site. The eastern wall supports Ivy *Hedera hibernica*.

This habitat is considered to be of **less than local ecological value**.

4.4.2 Eroding / upland rivers (FW1)

This habitat refers to the tributary of the Whitechurch Stream which flows east along the southern border of the site (Figure 4-4). The stream was approximately 1m in width, with the stream bed mainly covered in silty sediment. It also lacked instream vegetation and contained a substantial amount of vegetative debris, which impeded flow. Its banks were covered in Ivy, with scattered saplings of Elder *Sambucus nigra*, Sycamore *Acer pseudoplatanus* and Wild Cherry *Prunus avium*.

This habitat is considered to be of **county level ecological value** given its capacity to provide refuge and drinking water for local fauna; as well as acting as a wildlife corridor to larger freshwater systems, i.e., Whitechurch Stream and the River Dodder.

Figure 4-4: Tributary stream flowing along the southern boundary of the site

4.4.3 Amenity (improved) grassland (GA2)

This grassland habitat consisted of the maintained amenity lawn area, which dominated the site (Figure 4-5 overleaf). Floral assemblages in this habitat were typically comprised of Perennial Rye-grass *Lolium perenne*; Creeping Buttercup *Ranunculus repens*; Nettle *Urtica dioica*; Opposite-leaved Golden Saxifrage *Chrysosplenium oppositifolium*; Herb-Robert *Geranium robertianum*; Dandelion *Taraxacum* spp.; Smooth Sow-thistle *Sonchus oleraceus*; and moss spp.

This habitat is considered to be of **less than local ecological value**.

Figure 4-5: The amenity grassland and short treeline at the southernmost point of the site

4.4.4 Treelines (WL2)

A treeline is located along the southern boundaries of the proposed site (Figure 4-5). The floral species recorded in this habitat type included Sycamore; Wild Cherry; Large-leaved Lime *Tilia platyphyllos*; Elder; and Ivy. Additionally, a treeline is present just beyond the eastern boundary, with its canopy extending into the site in sections. Rook *Corvus frugilegus*; Blackbird *Turdus merula*; and Grey Squirrel *Sciurus carolinensis* were recorded within this habitat type, with the latter being an invasive non-native species.

This habitat is considered to be of **high local ecological value** given its capacity to provide refuge for local fauna and nesting opportunities for breeding birds; as well as acting as a wildlife corridor.

4.4.5 Scrub / Ornamental non-native shrub (WS1 / WS3)

A linear strip scrub / ornamental shrub was recorded running along the eastern boundary wall. Floral species recorded in this habitat included Bramble *Rubus fructicosus* agg.; Cleavers *Galium aparine*; Firethorn *Pyracantha* spp.; and immature Sycamore.

This habitat is considered to be of **low local ecological value** given its capacity to provide refuge for local fauna and nesting opportunities for breeding birds.

4.5 Protected Flora

No protected floral species were recorded by the JBA Ecologist during the ecological walkover survey of the proposed site. Furthermore, the NBDC shows no record of any protected flora species being present within site or its immediate vicinity (NBDC, 2022).

4.6 Protected Fauna

4.6.1 Mammals (Otter, Badger, Hedgehog and Pine Marten)

While no protected mammals were recorded on-site during the ecological walkover survey, three mammals, namely Otter *Lutra lutra*; Badger *Meles meles*; Hedgehog *Erinaceus europaeus*; and Pine Marten *Martes martes*, have been documented as being present within a 2km radius of the site in recent years (NBDC, 2022). These mammals are protected under the Wildlife Act 1976 (and subsequent amendments), with Otter and Pine Marten afforded additional protection under the EU Habitats Directive

Annexes II and IV; and Annex V, respectively. Under the precautionary principal, these species will still be examined in the mitigation section of this report.

Otter in the context of this site is considered to be of **county level ecological importance,** while the remainder of the mammal species are considered to be of **high local ecological importance**.

4.6.2 Bats

Desk Study

Four species of bat, namely Common Pipistrelle *Pipistrellus pipistrellus*; Soprano Pipistrelle *Pipistrellus pygmaeus*; Leisler's Bat *Nyctalus leisleri* ; and Daubenton's Bat *Myotis daubentonii* have been recorded in recent years within a 2km radius of the proposed development (NBDC, 2022). 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

During the ecological walkover of the proposed site, the JBA Ecologist documented the complete absence of any potential bat roosting features within the mature trees along the boundaries of the site. As a result, the potential bat roosting element has been screened out and will not be examined in any further detail in this report.

Bat presence / activity on-site

In the absence of bat activity survey data, under the precautionary principal, we must assume that one or more of the above bat species are likely to utilise this site for foraging and commuting given its suitability and the above local data records.

The proposed site has been valued as being **of high local ecological importance** for bats.

4.6.3 Breeding birds

During the ecological walkover survey, the JBA Ecologist did not note any protected bird species within or adjacent to the site. Recent records place 11 breeding bird species (see Appendix D) of conservation concern within 2km of the proposed site; of these species those most likely to inhabit the site are House Sparrow *Passer domesticus*; Starling *Sturnus vulgaris* and Wood Pigeon *Columba palumbus*.

The two former species are listed under the BoCCI Breeding Amber List (Gilbert et al., 2021), while the latter is protected under Annexes II(I) and III(I) of the EU Birds Directive. Given their status and past records within the vicinity of the site, these breeding bird species will be screened into the potential impact and mitigation sections of this report. All of the above are also protected under Ireland's Wildlife Act 1976 (and its subsequent amendments).

The proposed site has been valued as being **of high local ecological importance** for the above breeding birds.

4.6.4 Common Lizard

While Common Lizard *Zootoca vivipara* was not recorded within the site during the ecological walkover, there is a recent record of the species within a 2km radius of the proposed site. Common Lizard are protected under the Wildlife Act 1976 (and subsequent amendments).

Common Lizard are considered to be **of high local ecological importance**.

4.6.5 Common Frog

Though Common Frog *Rana temporaria* was not recorded during the walkover survey, there is a recent record observing Common Frog activity within 2.0km of the site (NBDC, 2022). Additionally, the Whitechurch Stream tributary flowing along the southern boundary of the site is likely to support a Common Frog population. Common Frog is protected under Annex V [1213] of the EU Habitats Directive, Appendix III of the Berne Convention and the Wildlife Act 1976 (& Amendments).

Common Frog are considered to be **of high local ecological importance**.

4.6.6 Atlantic Salmon, Lamprey spp. and European Eel

Atlantic Salmon *Salmo salar*, Lamprey *Lampetra* spp. and European Eel *Anguilla anguilla* have been recorded downstream of the site in the River Dodder (Kelly et al., 2014). European Eel currently has a Critically Endangered IUCN status and is protected under the OSPAR Convention, while Atlantic Salmon and Lamprey species are protected under the Annex II and V of the EU Habitats Directive. European Eel are regarded as being of international ecological importance given the level international protections afforded to them under the OSPAR Convention.

The site's watercourse and downstream network for Atlantic Salmon, Lamprey spp. and European Eel is considered to have **county level ecological importance.**

4.6.7 Terrestrial Invertebrates (Large Red-tailed Bumblebee and Moss Carder-bee)

While the JBA Ecologist did not document the presence of any protected terrestrial invertebrates within the site; there are recent records of the Large Red-tailed Bumblebee *Bombus (Melanobombus) lapidarius* and Moss Carder-bee *Bombus (Thoracombus) muscorum* being present within 2km of the site. These species of bumblebee are currently considered 'Near threatened' within the context of Ireland.

Given its status Large Red-tailed Bumblebee is considered to be of **high ecological importance** within the context of the site.

4.7 Invasive Non-native species

One invasive non-native species, namely Grey Squirrel, was recorded by the JBA Ecologist during the ecological walkover survey. Grey Squirrel is a high impact invasive species but is not currently listed on the Third schedule of the EC (Birds and Natural Habitats) Regulations 2011 S.I. No. 477/2011. The NBDC shows no record of any additional invasive non-native species being present on-site (NBDC, 2022).

4.8 Screening of Designated Sites & Ecological Features

The screening of designated sites and ecological features identified during the desktop study and ecological survey are given in Table 4-6. 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 4-6: Summary of ecological features and the screening assessment.

Designated site / Ecological feature	Value	Screening
North Dublin Bay SAC [000206]	International	Screened out (JBA, 2022 - AA Screening)
South Dublin Bay SAC [000210]	International	Screened out (JBA, 2022 - AA Screening)
North Bull Island SPA [004006]	International	Screened out (JBA, 2022 - AA Screening)
South Dublin Bay and River Tolka Estuary SPA [004006]	International	Screened out (JBA, 2022 - AA Screening)
Wicklow Mountains SAC [002122]	International	Screened out (JBA, 2022 - AA Screening)
Wicklow Mountains SPA [004040]	International	Screened out (JBA, 2022 - AA Screening)
Dolphins, Dublin Docks pNHA [000201]	National	Screened out

Designated site / Ecological feature	Value	Screening
North Dublin Bay pNHA [000206]	National	Screened out
South Dublin Bay pNHA [000210]	National	Screened out
Dodder Valley pNHA [000991]	National	Screened out
Fitzsimon's Wood pNHA [001753]	National	Screened out
Stone wall and other stonework	Less than local	Screened out
Eroding / upland river (Whitechruch Stream tributary)	County	**Screened in**
Amenity (improved) grassland	Less than local	Screened out
Treelines	High Local	**Screened in**
Scrub / Ornamental non-native shrub	Low Local	**Screened in**
Otter	County	**Screened in**
Other mammals (Badger, Hedgehog and Pine Marten)	High Local	**Screened in**
Bats	High Local	**Screened in**
Breeding Birds	High Local	**Screened in**
Common Lizard	High Local	**Screened in**
Common Frog	High Local	**Screened in**
Atlantic Salmon, Lamprey spp. and European Eel	County	**Screened in**
Terrestrial Invertebrates (Large Red-tailed Bumblebee and Moss Carder-bee)	High Local	**Screened in**

5 Other Relevant Plans and Projects

5.1 Cumulative Impacts

Potential sources of cumulative impacts were identified based on the ecology of valued ecological features. Potential sources of cumulative impacts were sought within an area where there is the potential for a significant impact on identified ecological features.

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

- Dublin City Development Plan 2016-2022
- River Basin Management Plan for Ireland 2018-2021
- Planning Applications (2018 - January 2022)

5.2 Plans

5.2.1 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, to support and facilitate economic activity and to 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), **therefore the South Dublin County Council (SDCC) Development Plan is not anticipated to contribute to cumulative or in-combination effects.**

5.2.2 Greater Dublin Drainage Strategy

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, 2018b). 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, 2018b).

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, 2018b).

The Greater Dublin Drainage Strategy is not anticipated to contribute to cumulative or in-combination effects.

5.2.3 River Basin Management Plan for Ireland 2018-2021

The 2nd cycle 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 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 River Basin Management Plan for Ireland (2018-2021) outlines the new approach that Ireland will take to protect our waters over the period to 2021. It builds on lessons learned from the first planning cycle in a number of areas:

- stronger and more effective delivery structures have been put in place to build the foundations and momentum for long-term improvements to water quality
- a new governance structure, which brings the policy, technical and implementation actors together with public and representative organisations. This will ensure the effective and coordinated delivery of measures.

Ireland's third River Basin Management Plan 2022-2027 is due to be published in December 2021. The 3rd cycle draft Catchment Reports were published in August 2021. The draft Catchment Reports provides a summary of the water quality assessment outcomes for respective catchment, including status and risk categories, significant threats and pressures, details on protected areas and a comparison between cycle 2 and cycle 3.

The draft Catchment Report for Liffey and Dublin Bay Catchment identifies an overall improvement of 5 waterbodies across the catchment since the cycle 2 assessment (Catchment Science & Management Unit, 2021). The significant pressures of the River Liffey in the downstream section are urban runoff and urban wastewater, where the impacts are a combination of nutrient and organic pollution and Ringsend agglomeration. The transitional and coastal waterbodies meet the requirements for the habitats and species of the SACs, including the Dublin Bays SACs. Specific water supporting conditions have not been identified for the dependent bird species in the SPAs and so waterbodies associated with SPAs are not included in the assessment, though for Dublin Bay they overlap with the SACs.

The River Basin Management Plan for Ireland 2018-2021 is not anticipated to contribute to cumulative or on-combination effects.

5.3 Other Projects

Since 2018, the projects listed (Table 5-1 overleaf), which are not retention applications, home extensions and/or internal alterations, have been granted planning permission in the locality of the proposed site.

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

Planning Reference	Address	Application Status	Decision date	Summary of development
SD18B/0480	5, Boden Villas, Taylor's Lane, Rathfarnham, Dublin 16	Granted (Conditional)	23/01/2019	(a) Demolition of porch entrance and relocation of front door; (b) construction of 68sq.m single storey rear extension; (c) internal alterations of existing dwelling; (d) construction of 21sq.m single storey structure with pitched roof containing plant room, utility and storage/play room to rear garden; (e) raise existing front garden block boundary wall adjacent to No. 6 to 1.8m; (f) all associated site works.
SD18A/0189	1, Boden Villas, Taylor's Lane, Rathfarnham, Dublin 16	Granted (Conditional)	05/09/2018	Subdivision of the land, the construction of a dormer bungalow to the rear of the existing dwelling, the provision of a shared driveway, car parking for both dwellings and all associated site works.
SD20A/0059	Taylor's Lane, Ballyboden, Dublin 16	Granted (Conditional)	19/06/2020	Alteration and additions (increasing the overall floor area from 2042.3 sq.m to 2480sq.m) to the existing Order of St. Augustine buildings. Single storey bedroom wing extension (275sq.m) to the northwest of the existing building; two storey bay extension (11.4sq.m) to existing north elevation at new Oratory; new entrance steps, ramp, planters and canopy to existing entrance; single storey extension (17.2sq.m) to rear (south elevation) of existing building to form lobby and prayer room; extension (47.4sq.m) to rear (south) elevation to include extension of existing kitchen/dining area at ground floor; extension (86.6sq.m) of existing first floor administration area providing 4 cellular offices and tea station; new canopy over rear service yard between existing main building and existing detached external store; general internal alterations to existing ground and first floor living, dining, bedroom and administration areas; alterations to existing external store to provide staff changing and laundry/utility facilities; new external patio seating area to rear (south) elevation of existing building; 20 car parking spaces including residents, staff, visitor and 1 disabled accessible space; all associated hard and soft landscaping and site development works.
SD20A/0288	Grange Golf Club, Rathfarnham, Dublin 16	Granted (Conditional)	01/04/2021	Demolition and removal an existing course maintenance building, adjoining prefabricated buildings and ancillary storage containers in order to construct a new course maintenance facility; the structure, mainly single storey in height, will incorporate a staff room and ancillary storage/plant areas at mezzanine level on the northern side; ancillary works will include the erection of a 3m high mesh fence with gates along the western boundary of the CMF enclosure; the entrance pillars and Iron Arch over with lettering at Grange Golf Club are Protected Structures RPS.296

5.4 Summary of Cumulative Impacts

The County Development Plan, Greater Dublin Drainage Strategy and RBMP are considered in-combination with the currently proposed project in the Screening Assessment section below.

6 Impact Assessment

6.1 Introduction

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

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

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

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

6.2 Do Nothing Scenario

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

6.3 Habitats & Species

6.3.1 Eroding / upland rivers; Otter; Common Frog; Atlantic Salmon; Lamprey spp. and European Eel

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

These ecological features (habitat and semi-/aquatic species) may also experience similar polluting impacts through groundwater-to-surface water pollution. The bedrock underlying the proposed site is comprised of dark slate-schist, quartzite and coticule. 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' (GSI, 2022). 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, 2022).

The characteristics of the underlying aquifer means it is likely to rapidly discharge to the nearby watercourses, i.e., the Whitechurch Stream tributary, within the short flow paths present in the local bedrock (GSI, 2022). Therefore, there is the potential for groundwater-to-surface water impacts for the eroding / upland river habitat, the Whitechurch Stream and River Dodder; and the protected species they host. Therefore, in the absence of groundwater-based mitigation, during the construction phase, minor adverse impacts on the eroding / upland river habitat are anticipated, while moderate impacts are anticipated for Otter; Atlantic Salmon; Lamprey spp.; and European Eel. Negligible adverse impacts are anticipated for Common Frog.

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

6.3.2 Treelines and Breeding birds

Both treelines are to be retained, though will still be vulnerable to surface water / groundwater pollutants and physical root compaction from machinery during the construction phase of the development. These impacts may result in the death and removal of a tree, reducing the availability of nesting sites for local breeding birds, as well as the foraging opportunities this tree provided.

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

6.3.3 Scrub / ornamental non-native shrub

The thin linear section of scrub / ornamental non-native shrub habitat on-site will suffer significant habitat loss as they are set to be cleared as a part of the construction phase. This will have knock-on detrimental impacts to faunal species that these areas of scrub support. This loss of habitat will extend into the operational phase of the development.

6.3.4 Mammals (Otter; Badger; Hedgehog; and Pine Marten)

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

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

6.3.5 Bats

The four 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 treelines 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 residential structure 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.

6.3.6 Common Lizard and Common Frog

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

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

6.3.7 Terrestrial Invertebrates (Large Red-tailed Bumblebee and Moss Carder-bee)

The foraging and commuting activities of the Large Red-tailed Bumblebee and Moss Carder-bee will be adversely impacted as result of the works that will take place during the developments construction

phase. These temporary minor impacts on a locally important ecological feature will have an overall negligible impact.

During the operational phase, the majority of flora present on-site will be replaced by artificial surfaces, reducing the total available foraging area for this bumblebee species. In the absence of landscape design mitigation, adverse operational impacts from the development on the local Large Red-tailed Bumblebee and Moss Carder-bee populations are anticipated.

6.4 Invasive Non-native Species

While Grey Squirrel is present within the site boundary, the continued presence of this mammal does not pose any potential threat or adverse impact to the ecological features within the proposed site.

6.5 Summary

The following potential significant impacts have been identified below, with the necessary mitigation is discussed in the next chapter:

- Pollution of the eroding / upland river habitat (Whitechurch Stream tributary; Whitechurch Stream and River Dodder) and the protected species they host (i.e., for Common Frog; Atlantic Salmon; Lamprey spp.; and European Eel).
- Degradation of treeline habitats through potential polluting events and root compaction, resulting tree death and removal, reducing nesting and foraging opportunities for local breeding bird species.
- Notable habitat loss for linear scrub / ornamental non-native shrub habitat present on-site.
- Disturbance of commuting and foraging terrestrial mammals, bat species, Common Frog and Common Lizard as well as potentially accidental fatal entrapment for these faunal groups.
- Foraging and commuting disturbance during construction and operational phases to the local Large Red-tailed Bumblebee and Moss Carder-bee populations.

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

7 Mitigation

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

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

7.1 Mitigation for Project Construction Phase

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

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

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

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

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

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

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

7.1.1 Site Compound

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

  - Site offices;

  - Site facilities;

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

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

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

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

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

- The site environmental manger will be responsible for maintaining all training records.
- The contents of any tank will be clearly marked on the tank, and a notice displayed requiring that valves and trigger guns be locked when not in use.
- Drainage collection system for washing area to prevent run-off into surface water system.
- All refuelling of vehicles will be carried out at the fuel stores within the main site compound and only ADR trained personnel will be permitted to operate fuel bowsers.

7.1.2 Water Quality

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

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

7.1.3 Pollution Control and Spill Prevention

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

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

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

- Emergency response awareness training for all Project personnel on-site works.
- Appropriate and sufficient spill control materials will be installed at strategic locations within the site. Spills kits for immediate use will be kept in the cab of mobile equipment.
- Spill kits will be stored in the site compound with easy access for delivery to site in the case of an emergency. A minimum stock of spill kits will be maintained at all times and site vehicles will

carry spill kits at all times. Spill kits must include suitable spill control materials to deal with the type of spillage that may occur and where it may occur. Typical contents of an on-site spill kit will include the following as a minimum;

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

7.1.4 Mitigation for clearance of the central tree and scrub / ornamental non-native shrub vegetation

The clearance of the central semi-mature tree and scrub / ornamental non-native shrub vegetation are to be conducted outside of the breeding bird season (March – September inclusive). If this is not possible, a breeding bird survey by an appropriately qualified ecologist will be undertaken in advance of the works to ensure that there will be no impacts on nesting birds. If nests are found, they will be safeguarded, with an appropriate buffer, until the chicks have successfully fledged.

7.1.5 General Avoidance Measures

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

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

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

7.2 Mitigation for Operation Phase

7.2 1 Remedial Vegetation Planting

The remedial vegetation planting within the proposed building's green roof system will help compensate for the loss of the treeline and scrub / ornamental non-native shrub habitats within the site. The planting will allow local birds and invertebrates to continue to forage within the site. Additionally, the stream-side berm will naturally be recolonised by the existing riparian vegetation present along the stream.

7.2 2 Construction Site Lighting Design

Hours of illumination during construction:

Site lighting should be switched off or at lower light output during inactive construction site hours; this would benefit the bats foraging and/or commuting in the locality.

Light levels and type:

Construction 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 in the lighting located along the boundaries of the site to reduce the blue light component.

Dark corridors (Construction and Operational Phases):

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. This dark corridor will be present along the southern boundary of the site. This allows for the bats to commute along the southern border of the site on their way to and from the local foraging sites.

8 Residual Impact

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

8.1 Construction Phase

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

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

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

8.2 Operational Phase

The proposed mitigation of remedial planting (green roof) during the operational phase should help compensate for loss of vegetation experienced during the construction phase. Overall, the development will have a negligible residual impact on the biodiversity within and adjacent to the site.

9 Summary of Impact Assessment

9.1 EcIA Table

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

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

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

Ecological Features	Impacts	Importance of Feature	Significance of impact without Mitigation	Mitigation	Significance of Residual Impacts
Treelines	Potential degradation of habitat through pollution events. Potential degradation of tree root network via soil compaction from machinery.	High Local	Medium impact: Minor significance	Strict adherence to: The mitigations outlined in Section 7.1.4 pertaining to the timing of vegetation clearance, to avoid impacts on breeding birds.	Negligible significance
Breeding birds	Loss of habitat currently providing a nesting sites and foraging opportunities for local breeding birds.	High Local	Medium impact: Minor significance		Negligible significance
Eroding / upland stream (Fairyhouse Stream)	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 7.1.1, 7.1.2, 7.1.3, and 7.1.5 pertaining to the protection of surface water and groundwater; and the habitats and species reliant on them; as well as general disturbance of nocturnal animals, i.e. Common Frog.	Negligible significance
Otter		County	Low impact: Minor significance		Negligible significance
Common Frog		High Local	Low impact: Negligible significance		Neutral significance
Atlantic Salmon		County	Low impact: Minor significance		Negligible significance
Lamprey spp.		County	Low impact: Minor significance		Negligible significance
European Eel		County	Low impact: Minor significance		Negligible significance

Ecological Features	Impacts	Importance of Feature	Significance of impact without Mitigation	Mitigation	Significance of Residual Impacts
Scrub / Ornamental non-native shrub	Habitat loss	Low Local	High impact: Minor significance	Strict adherence to: The mitigations outlined in Section 7.1.4 pertaining to the timing of vegetation clearance and trimming, to avoid impacts on breeding birds. The remedial planting on-site outlined in Section 7.2.1, helps compensate for the loss of vegetation during the construction phase.	Negligible significance
Otter	Disturbance to foraging and commuting activities within the vicinity of the site. Potential loss of life through accidental entrapment in construction setting.	High Local	Low impact: Minor significance	Strict adherence to: Best practice guidance / mitigation measures listed in Sections 7.1.1, 7.1.2, 7.1.3, and 7.1.5 pertaining to the protection of surface water and groundwater; and the habitats and species reliant on them; general disturbance of nocturnal animals, i.e. Hedgehog. The remedial planting on-site outlined in Section 7.2.1, helps compensate for the loss of vegetation during the construction phase. The lighting design mitigations in Section 7.2.2, ensuring no disturbance to local nocturnal mammal and bat activity in the vicinity of the development.	Negligible significance
Other mammals (Badger, Hedgehog and Pine Marten)		High Local	Low impact: Negligible significance		Negligible significance
Common Lizard		High Local	Low impact: Negligible significance		Negligible significance
Common Frog					
Bats	Disturbance to foraging and commuting activities within the vicinity of the site.	High Local	Medium impact: Minor significance		Negligible significance

Ecological Features	Impacts	Importance of Feature	Significance of impact without Mitigation	Mitigation	Significance of Residual Impacts
Terrestrial Invertebrates (Large Red-tailed Bumblebee and Moss Carder-bee)	Disturbance to foraging and commuting activities within the vicinity of the site.	High Local	Low impact: Negligible significance	Strict adherence to: The remedial planting on-site outlined in Section 7.2.1, helps compensate for the loss of vegetation during the construction phase.	Negligible significance

9.2 Cumulative Impacts

As there are no significant residual impacts on ecological features (following mitigation measures) from this development, there is therefore no potential for other plans or projects identified in Section 5 to act in combination with it. Therefore, significant cumulative impacts are not expected to occur on the ecological features within the proposed site.

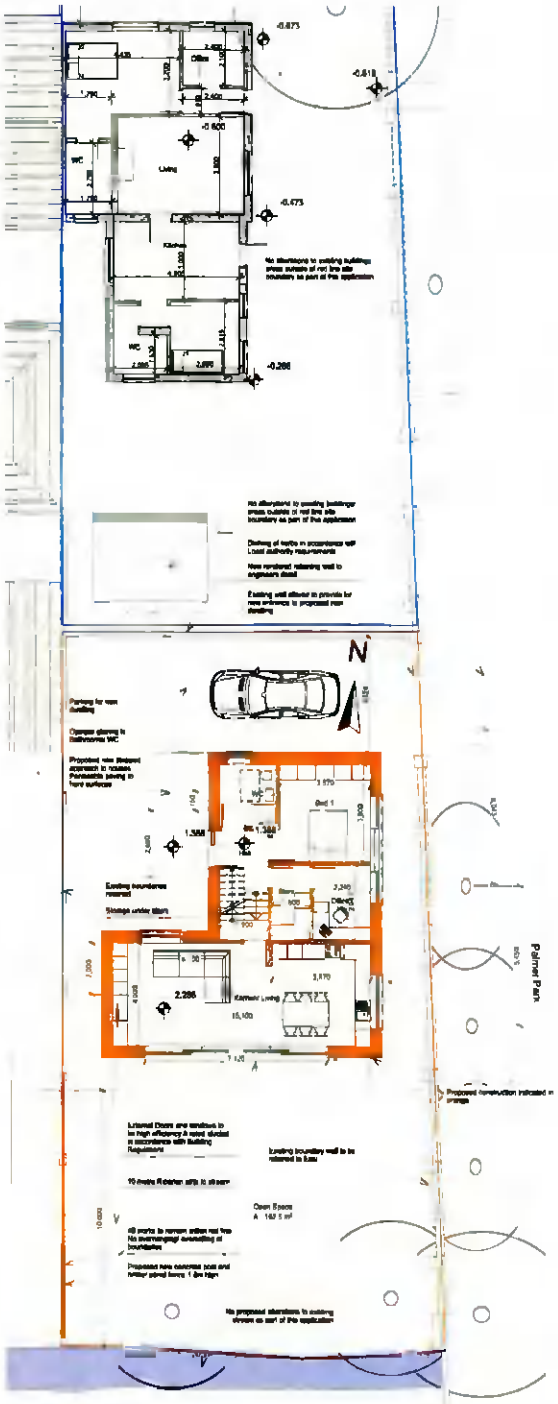
10 Conclusion

The construction and operation of this proposed residential development has been shown to potentially impact a number of different habitats with county (eroding/ upland river - Whitechurch Stream tributary) and local importance (treelines and scrub / ornamental non-native shrub) and faunal groups (Otter, Badger; Hedgehog; Pine Marten; Bats; Breeding birds; Common Lizard; Common Frog; Atlantic Salmon; Lamprey spp.; European Eel; Large Red-tailed Bumblebee; and Moss Carder-bee), who's ecological importance ranges from local to international.

Based upon the information supplied, regarding the site layout and drainage; and provided that the development is constructed in accordance with the mitigation measures outlined above, there will be no significant impacts alone or 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 on any designated conservation sites.

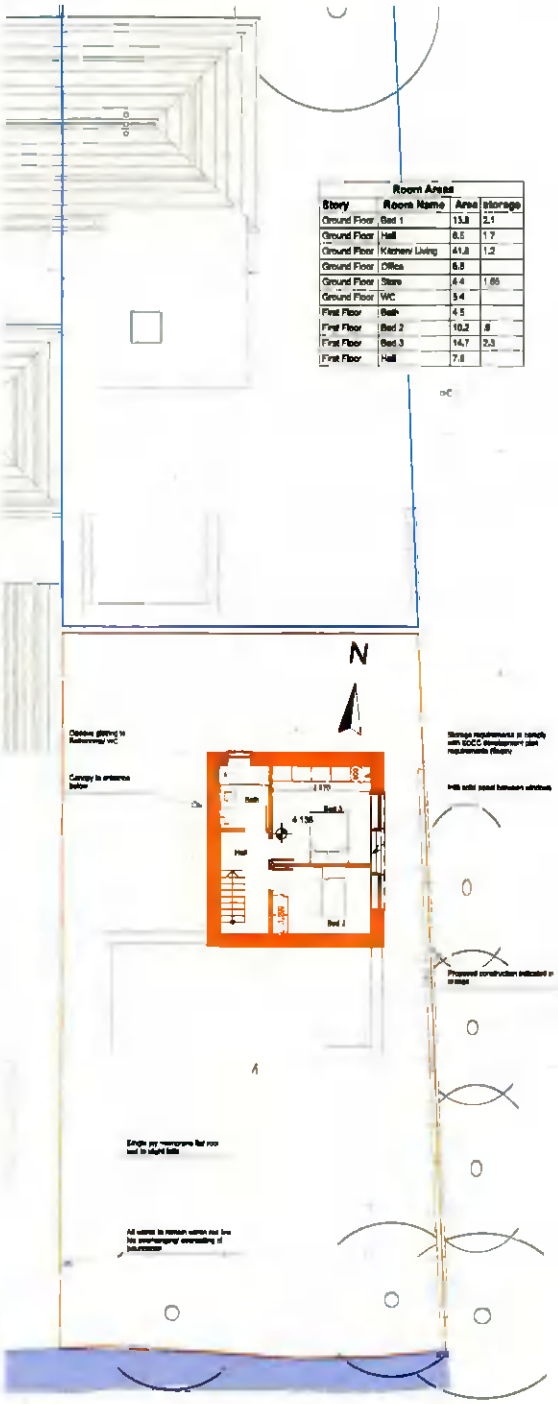
Appendices

A Site Layout Plan

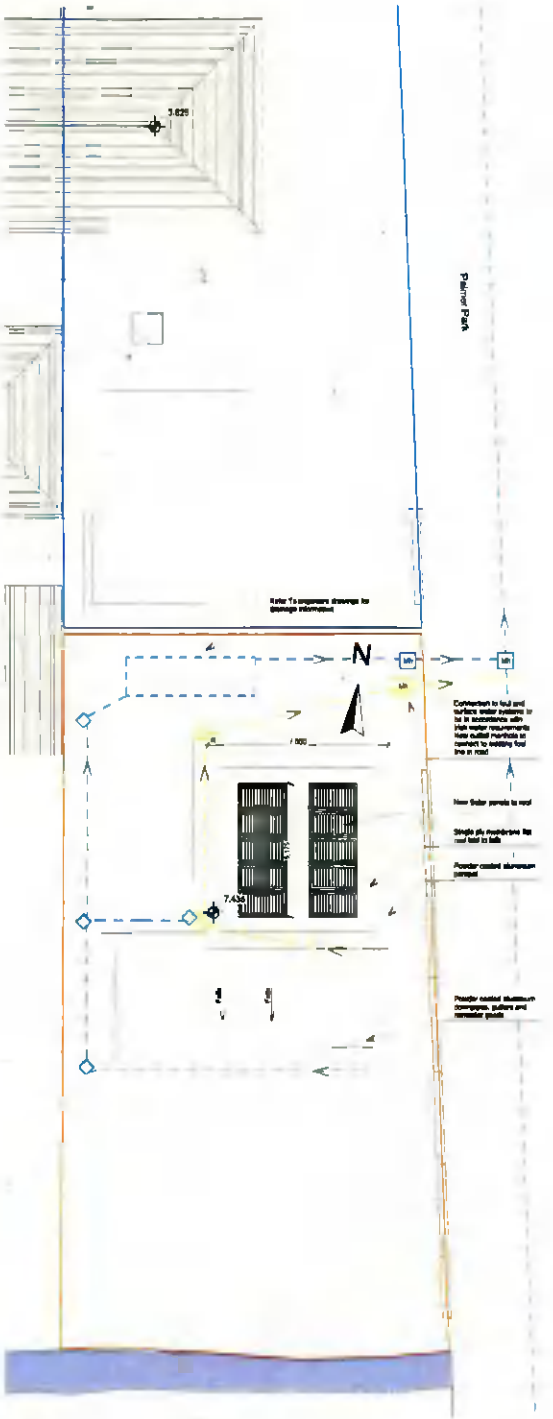


Proposed Ground Floor
1:100

Room Areas			
Story	Room Name	Area	storage
Ground Floor	Bed 1	13.8	2.1
Ground Floor	Hall	8.5	1.7
Ground Floor	Kitchen/ Living	41.8	1.2
Ground Floor	Office	6.8	
Ground Floor	Store	4.4	1.85
Ground Floor	WC	3.4	
First Floor	Bath	4.5	
First Floor	Bed 2	10.2	.8
First Floor	Bed 3	14.7	2.3
First Floor	Hall	7.8	



Proposed First Floor
1:100



Proposed Roof Plan
1:100

Ken Keegan — 6 Boden Villas D16 K7X1

Ken Keegan — 1:100 @ A1

Planning

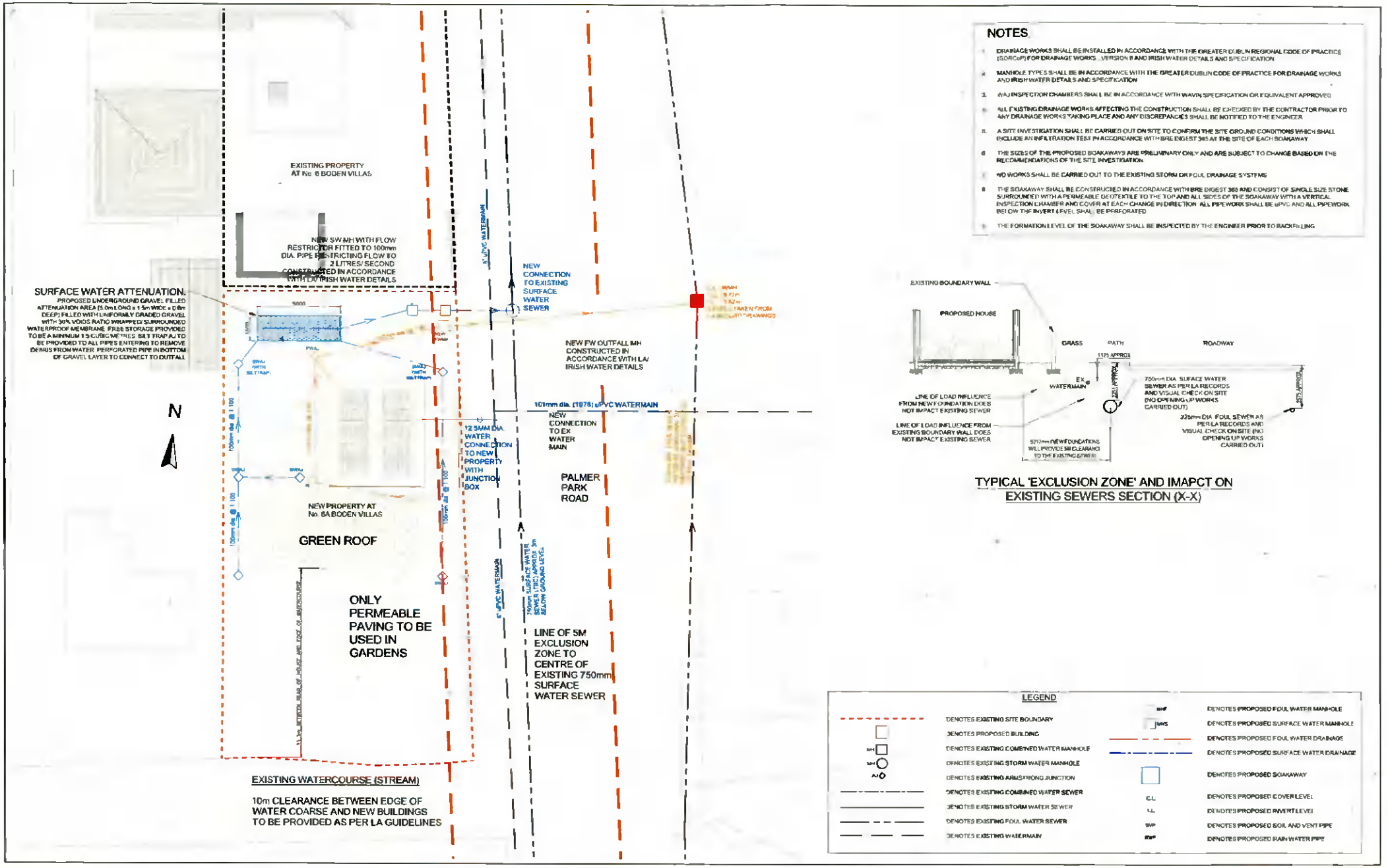
GA Plans

2022 - P03 - 02

DARRAGH LYNCH ARCHITECTS

Appendices

B Site Drainage Plan



NOTES

1. DRAINAGE WORKS SHALL BE INSTALLED IN ACCORDANCE WITH THE GREATER DUBLIN REGIONAL CODE OF PRACTICE (GDRCoP) FOR DRAINAGE WORKS , VERSION 6 AND IRISH WATER DETAILS AND SPECIFICATION
2. MANHOLE TYPES SHALL BE IN ACCORDANCE WITH THE GREATER DUBLIN CODE OF PRACTICE FOR DRAINAGE WORKS AND IRISH WATER DETAILS AND SPECIFICATION
3. IW/AJ INSPECTION CHAMBERS SHALL BE IN ACCORDANCE WITH WAVIN SPECIFICATION OR EQUIVALENT APPROVED
4. ALL EXISTING DRAINAGE WORKS AFFECTING THE CONSTRUCTION SHALL BE CHECKED BY THE CONTRACTOR PRIOR TO ANY DRAINAGE WORKS TAKING PLACE AND ANY DISCREPANCIES SHALL BE NOTIFIED TO THE ENGINEER
5. A SITE INVESTIGATION SHALL BE CARRIED OUT ON SITE TO CONFIRM THE SITE GROUND CONDITIONS WHICH SHALL INCLUDE AN INFILTRATION TEST IN ACCORDANCE WITH BRE DIGEST 365 AT THE SITE OF EACH SOAKAWAY
6. THE SIZES OF THE PROPOSED SOAKAWAYS ARE PRELIMINARY ONLY AND ARE SUBJECT TO CHANGE BASED ON THE RECOMMENDATIONS OF THE SITE INVESTIGATION.
7. NO WORKS SHALL BE CARRIED OUT TO THE EXISTING STORM OR FOUL DRAINAGE SYSTEMS
8. THE SOAKAWAY SHALL BE CONSTRUCTED IN ACCORDANCE WITH BRE DIGEST 365 AND CONSIST OF SINGLE SIZE STONE SURROUNDED WITH A PERMEABLE GEOTEXTILE TO THE TOP AND ALL SIDES OF THE SOAKAWAY WITH A VERTICAL INSPECTION CHAMBER AND COVER AT EACH CHANGE IN DIRECTION. ALL PIPEWORK SHALL BE uPVC AND ALL PIPEWORK BELOW THE INVERT LEVEL SHALL BE PERFORATED
9. THE FORMATION LEVEL OF THE SOAKAWAY SHALL BE INSPECTED BY THE ENGINEER PRIOR TO BACKFILLING

TYPICAL 'EXCLUSION ZONE' AND IMAPCT ON EXISTING SEWERS SECTION (X-X)

LEGEND

- DENOTES EXISTING SITE BOUNDARY
- DENOTES PROPOSED BUILDING
- DENOTES EXISTING COMBINED WATER MANHOLE
- DENOTES EXISTING STORM WATER MANHOLE
- DENOTES EXISTING ARMSTRONG JUNCTION
- DENOTES EXISTING COMBINED WATER SEWER
- DENOTES EXISTING STORM WATER SEWER
- DENOTES EXISTING FOUL WATER SEWER
- DENOTES EXISTING WATERMAIN
- DENOTES PROPOSED FOUL WATER MANHOLE
- DENOTES PROPOSED SURFACE WATER MANHOLE
- DENOTES PROPOSED FOUL WATER DRAINAGE
- DENOTES PROPOSED SURFACE WATER DRAINAGE
- DENOTES PROPOSED SOAKAWAY
- C.L. DENOTES PROPOSED COVER LEVEL
- I.L. DENOTES PROPOSED INVERT LEVEL
- SVP DENOTES PROPOSED SOIL AND VENT PIPE
- RWP DENOTES PROPOSED RAIN WATER PIPE

Notes
For building out refer to Architect's drawings
This drawing to be read in conjunction with all other Architectural and Engineering drawings and all other relevant drawings and Specifications.
DO NOT SCALE THIS DRAWING. Figured dimensions only to be used in all cases. Verify dimensions on site and report any discrepancies to the author immediately.
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Rev	Dsn	Chkd	Amendments	Date

Rev	Dsn	Chkd	Amendments	Date

FOR PLANNING

Drawing Sheet Size: A3

Client: DARRAGH LYNCH ARCHITECTS
Project: NEW HOUSE AT 8A BODEN VILLAS, BALLYBODEN
Title: SITE DRAINAGE PLAN
Dwg No: 1021-TCE-00-GF-DR-C-0001 Revision: P01
Scale: 1:100 Date: 18/3/2021 Status:
Drn By: PJC Chkd By: AS Appd By:

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C Relevant Policy and Legislation

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

C.1 Biodiversity Policy Guidance

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

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

C.2 Designated Sites and Nature Conservation

C.2.1 Statutory Designated Nature Conservation Sites

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

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

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

C.2 2 Non-Statutory Designations

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

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

C.2.3 Protected and Notable Species

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

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

D National Biodiversity Data Centre (2022); Kelly et al., (2014)

D.1 Recent records (within 10 years) of protected species within the 5km ZoI

Common Name	Latin Name	Designation	Record Date
Mammals			
European Badger	*Meles meles*	Wildlife Act 1976 & Amendments	31/03/2018
European Hedgehog	*Erinaceus europaeus*	Wildlife Act 1976 & Amendments	22/06/2018
Pine Marten	*Martes martes*	EU Habitats Directive >> Annex V Wildlife Act 1976 & Amendments	22/05/2018
Daubenton's Bat	*Myotis daubentonii*	EU Habitats Directive >> Annex IV Wildlife Act 1976 & Amendments	15/08/2014
Leisler's Bat	*Nyctalus leisleri*	EU Habitats Directive >> Annex IV Wildlife Act 1976 & Amendments	29/07/2014
Common Pipistrelle	*Pipistrellus pipistrellus*	EU Habitats Directive >> Annex IV Wildlife Act 1976 & Amendments	25/07/2011
Soprano Pipistrelle	*Pipistrellus pygmaeus*	EU Habitats Directive >> Annex IV Wildlife Act 1976 & Amendments	15/08/2014
Birds			
Rock Pigeon	*Columba livia*	EU Birds Directive >> Annex II	11/04/2020
Little Egret	*Egretta garzetta*	EU Birds Directive >> Annex I	05/03/2014
Coot	*Fulica atra*	EU Birds Directive >> Annex II & III Birds of Conservation Concern in Ireland: Amber List	05/03/2014
Kingfisher	*Alcedo atthis*	EU Birds Directive >> Annex I Birds of Conservation Concern in Ireland: Amber List	23/04/2020
Barn Swallow	*Hirundo rustica*	Birds of Conservation Concern in Ireland: Amber List	10/04/2015
Mallard	*Anas platyrhynchos*	EU Birds Directive >> Annex II & III	15/04/2020
Starling	*Sturnus vulgaris*	Birds of Conservation Concern in Ireland: Amber List	27/04/2013
House Sparrow	*Passer domesticus*	Birds of Conservation Concern in Ireland: Amber List	27/04/2013
Great Black-backed Gull	*Larus marinus*	Birds of Conservation Concern in Ireland: Amber List	05/03/2014
Great Cormorant	*Phalacrocorax carbo*	Birds of Conservation Concern in Ireland: Amber List	01/09/2017
Wood Pigeon	*Columba polumbus*	EU Birds Directive >> Annex II & III Birds of Conservation Concern in Ireland: Amber List	29/04/2020
Amphibians			
Common Frog	*Rana temporaria*	EU Habitats Directive >> Annex V Wildlife Act 1976 & Amendments	06/09/2020
Fish			
European Eel	*Anguilla anguilla*	OSPAR Convention Red Status: Critically Endangered Wildlife Act 1976 & Amendments	Kelly et al., 2014
Atlantic Salmon	*Salmo salar*	OSPAR Convention	Kelly et al.,

Common Name	Latin Name	Designation	Record Date
		EU Habitats Directive >> Annex II & V Wildlife Act 1976 & Amendments	2014
Lamprey spp.	*Lampetra*	EU Habitats Directive >> Annex II & V Wildlife Act 1976 & Amendments	Kelly et al., 2014
Terrestrial Invertebrates			
Large Red-Tailed Bumble Bee	*Bombus (Melanobombus) lapidarius*	Irish Red List: Near Threatened	12/06/2020
Moss Carder-bee	*Bombus (Thoracombus) muscorum*	Irish Red List: Near Threatened	09/08/2017

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