May 2022

DB080-MOR-LS-XX-RP-V-XXXX-8060

Ecological Impact Assessment

Proposed Development (Equinix DB8)

RKD

On behalf of

RKD Architects Ltd.

Profile Park, Co. Dublin

MALONE O'REGAN ENVIRONMENTAL

QUALITY
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1 INTRODUCTION

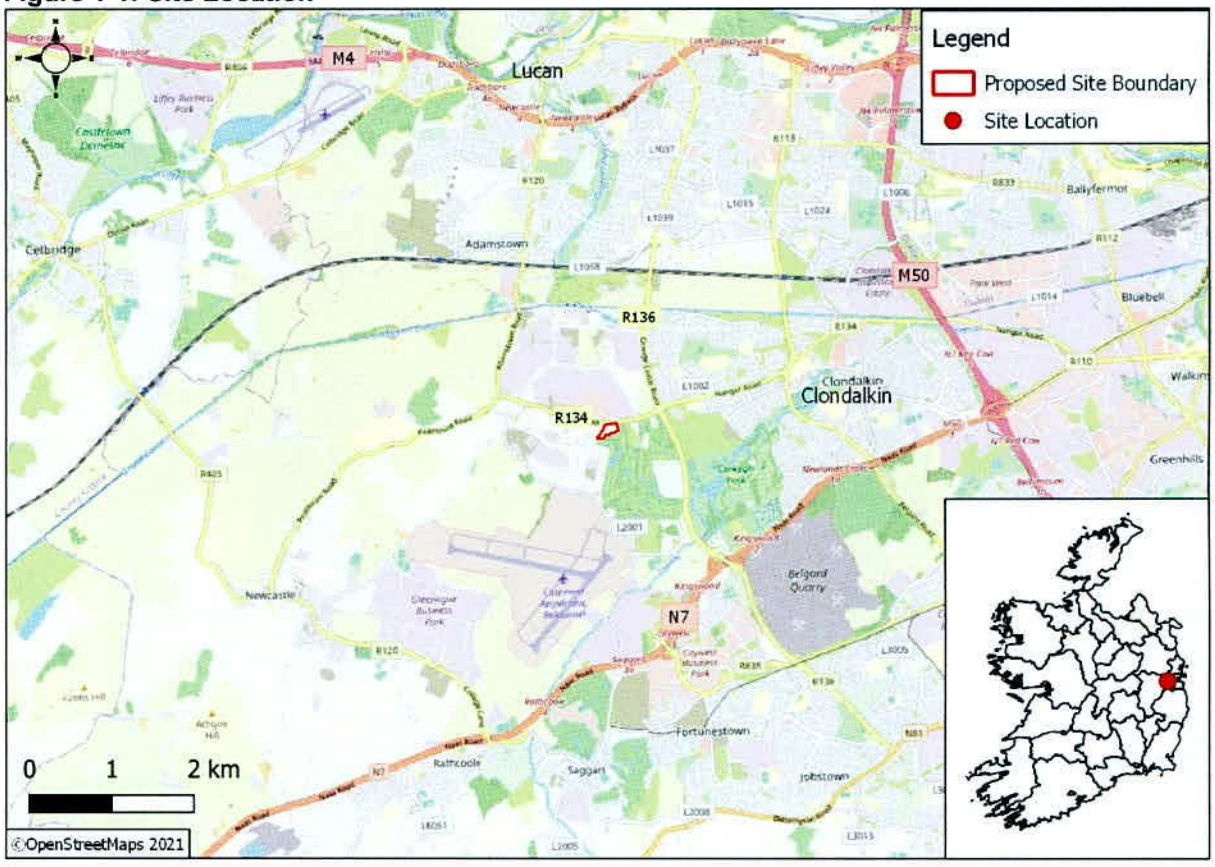
1.1 Background and Purpose of Report

Malone O'Regan Environmental (MOR) were commissioned by RKD Architects Ltd on behalf of Equinix (Ireland) Ltd. to undertake an Ecological Impact Assessment (EclA) for the construction of an onsite power generation plant and all auxiliary works (the 'Proposed Development'), at Profile Park, Kilcarbery, Dublin, Co. Dublin (OS Reference O 04052 30807).

This report contains modifications to the planning application (SD21A/0186), which proposed to construct a 3-4No. storey data centre, plant room, ESB substation, parking facilities and all other auxiliary works within the boundary outlined below (Figure 1-1). This planning application has been granted as of the 24th of March 2022.

The location of the proposed development ('the Site') is shown in Figure 1-1.

Figure 1-1: Site Location



1.2 Statement of Authority

The report was approved by Mr. Dyfrig Hubble, Principal Ecologist. Dyfrig is a full member of the Chartered Institute of Ecology and Environmental Management. Dyfrig has over 15 years' experience working in the ecological consultancy sector, including habitat appraisals and specialist species-specific surveys.

1.3 Legislation and Planning Policy Context

1.3.1 Legislation Policy Context

Within Ireland, a number of sites of international or national importance to nature conservation, as well as many species of animal and plants are afforded a degree of legal protection, as set out in Box 1 below.

A study of biodiversity related planning policy at both national and local level has been undertaken for the Site and locality in order to highlight any potential conflicts with the relevant legislation and guidance documents.

Box 1 Designated Wildlife Sites and Protected and Otherwise Notable Habitats and Species

The National Parks and Wildlife Service (NPWS) notifies sites in Ireland that are of international or national importance for nature conservation (although some sites that are of national importance for certain species have not been so designated).

Internationally important sites may also be designated as:

- Special Areas of Conservation (SACs) and Candidate Special Area of Conservation (cSACs): the legal requirements relating to the designation and management of SACs in Ireland are set out in the European Communities (Birds and Natural Habitats) Regulations 2011-2021.
- Special Protection Areas (SPAs) and candidate Special Protected Areas (cSPAs): strictly protected sites classified in accordance with Article 4 of the EC Directive on the Conservation of Wild Birds (79/409/EEC), also known as the Birds Directive; and,
- Ramsar sites: wetlands of international importance designated under the Ramsar Convention, to which Ireland is a signatory.

Other statutory site designations relating to nature conservation are:

- National Heritage Areas (NHAs): these represent examples of some of the most important natural and semi-natural terrestrial and coastal habitats in the country and are afforded protection under the Wildlife (Amendment) Act 2000. NHAs are legally protected from damage and receive protection from the date they are formally proposed for designation; and,
- Proposed Natural Heritage Areas (pNHAs): these sites are not afforded the same protection as NHAs. These sites are proposed by the NPWS but are not statutorily proposed or designated. Prior to statutory designation these are subject to a very limited legal protection. They are, however, sites of significance for wildlife and habitats and are important for the purposes of this EcIA report.

Legally protected species

Many species of animal and plant receive some degree of legal protection. For the purposes of this study, legal protection refers to:

- Species included in the Wildlife (Amendment) Act 2000, excluding species that are only protected in relation to their sale, reflecting the fact that the site disposal will not include any proposals relating to the sale of species; and,
- Species afforded protection under the Flora Protection Order 1999.

Other notable habitat/species categories

- Biodiversity Action Plan (BAP) species: those targeted in local or national BAPs as being of particular conservation concern (priority species);
- Red and Amber List birds: those listed as being of high or medium conservation concern as listed by Birdwatch Ireland [1]; and,
- Other Irish Red Data Book species and Nationally/Regionally/Locally Notable species where appropriate.

1.3.2 National Planning Context

1.3.2.1 Project Ireland 2040, National Planning Framework

Project Ireland 2040 was launched by the Government in February 2018 [2] and incorporates two policy documents - the National Planning Framework and the National Development Plan 2021 -2030.

Under the biodiversity section "Project Ireland 2040 National Planning Framework", the National Policy Objective 59 is to:

'Enhance the conservation status and improve the management of protected areas and protected species by:

- *Implementing relevant EU Directives to protect Ireland's environment and wildlife;*
- *Integrating policies and objectives for the protection and restoration of biodiversity in statutory development plans;*
- *Developing and utilising licensing and consent systems to facilitate sustainable activities within Natura 2000 sites; and,*
- *Continued research, survey programmes and monitoring of habitats and species.'*

The National Policy Objective 60 in the same document is to:

> *'Conserve and enhance the rich qualities of natural and cultural heritage of Ireland in a manner appropriate to their significance.'*

1.3.3 Local Planning Context

1.3.3.1 South Dublin County Development Plan 2016-2022

The South Dublin County Development Plan (SDCDP) 2016 – 2022 [3] has a variety of statements in different sections which relate directly to the protection of biodiversity and natural heritage in the context of Proposed Developments. These include policies to ensure compliance with EU Habitats Directives and to ensure the protection of the integrity of European sites.

The following objectives contained within the SDCDP are relevant to the proposed development:

IE2 Objective 9:

> *'To protect water bodies and watercourses, including rivers, streams, associated undeveloped riparian strips, wetlands and natural floodplains, within the County from inappropriate development. This will include protection buffers in riverine and wetland areas as appropriate.'*

IE7 Objective 5:

> *'To ensure external lighting schemes minimise light spillage or pollution in the immediate surrounding environment and do not adversely impact on residential or visual amenity and biodiversity in the surrounding areas.'*

G2 Objective 6:

> *'To protect and enhance the County's hedgerow network, in particular hedgerows that form townland, parish and barony boundaries, and increase hedgerow coverage using locally native species.'*

G2 Objective 9:

> *'To preserve, protect and augment trees, groups of trees, woodlands and hedgerows within the County by increasing tree canopy coverage using locally native species and by incorporating them within design proposals and supporting their integration into the Green Infrastructure network.'*

G2 Objective 11:

> *'To incorporate appropriate elements of Green Infrastructure e.g. new tree planting, grass verges, planters etc. into existing areas of hard infrastructure wherever possible, thereby integrating these areas of existing urban environment into the overall Green Infrastructure network.'*

G2 Objective 12:

> *'To seek to control and manage non-native invasive species and to develop strategies with relevant stakeholders to assist in the control of these species throughout the County.'*

G2 Objective 13:

> *'To seek to prevent the loss of woodlands, hedgerows, aquatic habitats and wetlands wherever possible including requiring a programme to monitor and restrict the spread of invasive species such as those located along the River Dodder.'*

G3 Objective 2:

'To maintain a biodiversity protection zone of not less than 10 metres from the top of the bank of all watercourses in the County, with the full extent of the protection zone to be determined on a case-by-case basis by the Planning Authority, based on site specific characteristics and sensitivities. Strategic Green Routes and Trails identified in the South Dublin Tourism Strategy, 2015; the Greater Dublin Area Strategic Cycle Network; and other government plans or programmes will be open for consideration within the biodiversity protection zone, subject to appropriate safeguards and assessments, as these routes increase the accessibility of the Green Infrastructure network.'

G3 Objective 5:

'To restrict the encroachment of development on watercourses, and provide for protection measures to watercourses and their banks, including but not limited to: the prevention of pollution of the watercourse, the protection of the river bank from erosion, the retention and/or provision of wildlife corridors and the protection from light spill in sensitive locations, including during construction of permitted development.'

G4 Objective 4:

'To minimise the environmental impact of external lighting at sensitive locations within the Green Infrastructure network to achieve a sustainable balance between the recreational needs of an area, the safety of walking and cycling routes and the protection of light sensitive species such as bats.'

G6 Objective 1:

'To protect and enhance existing ecological features including tree stands, woodlands, hedgerows and watercourses in all new developments as an essential part of the design process.'

G6 Objective 3:

'To require multifunctional open space provision within all new developments that includes provision for ecology and sustainable water management.'

HCL12 Objective 1:

'To prevent development that would adversely affect the integrity of any Natura 2000 site located within and immediately adjacent to the County and promote favourable conservation status of habitats and protected species including those listed under the Birds Directive, the Wildlife Acts and the Habitats Directive.'

HCL12 Objective 2:

'To ensure that projects that give rise to significant direct, indirect or secondary impacts on Natura 2000 sites, either individually or in combination with other plans or projects, will not be permitted unless the following is robustly demonstrated in accordance with Article 6(4) of the Habitats Directive and S.177AA of the Planning and Development Act (2000 – 2010) or any superseding legislation:

1) *There are no less damaging alternative solutions available; and*
2) *There are imperative reasons of overriding public interest (as defined in the Habitats Directive) requiring the project to proceed; and*
3) *Adequate compensatory measures have been identified that can be put in place.'*

HCL13 Objective 1:

'To ensure that any proposal for development within or adjacent to a proposed Natural Heritage Area (pNHA) is designed and sited to minimise its impact on the biodiversity, ecological, geological and landscape value of the pNHA particularly plant and animal species listed under the Wildlife Acts and the Habitats and Birds Directive including their habitats.'

HCL15 Objective 1:

'To ensure that development does not have a significant adverse impact on rare and threatened species, including those protected under the Wildlife Acts 1976 and 2000, the Birds Directive 1979 and the Habitats Directive 1992.'

HCL15 Objective 2:

'To ensure that, where evidence of species that are protected under the Wildlife Acts 1976 and 2000, the Birds Directive 1979 and the Habitats Directive 1992 exists, appropriate avoidance and mitigation measures are incorporated into development proposals as part of any ecological impact assessment.'

HCL15 Objective 3:

'To protect existing trees, hedgerows, and woodlands which are of amenity or biodiversity value and/ or contribute to landscape character and ensure that proper provision is made for their protection and management in accordance with Living with Trees: South Dublin County Council's Tree Management Policy 2015-2020.'

1.3.3.2 South Dublin County Development Plan 2022-2028

The preparation of an updated County Development Plan (CDP) is currently underway, due for release in August 2022. It is therefore considered appropriate that the provisions of this document should be examined, with any deviations from the previous CPD outlined as follows [4]:

NCBH2 Objective 1:

'To support the implementation of the National Biodiversity Action Plan (2017- 2021) and the All-Ireland Pollinator Plan (2021-2025) and to support the adoption and implementation of the South Dublin County Biodiversity Action Plan (2020-2026) and Pollinator Action Plan (2021-2025) and any superseding plans.'

NCBH5 Objective 1:

'Protect and promote the conservation of biodiversity outside of designated areas and ensure that species and habitats that are protected under the Wildlife Acts 1976 to 2018, the Birds Directive 1979 and the Habitats Directive 1992, the Flora (Protection) Order 2015, and wildlife corridors are adequately protected.'

NCDH10 Objective 2:

'To ensure that the Council promptly and appropriately treats invasive species such as Japanese Knotweed, where notified by members of the public that such species, located on public lands, pose a potential threat to property.'

Policy GI2:

'Strengthen the existing Green Infrastructure network and ensure all new developments contribute towards GI, in order to protect and enhance biodiversity across the County as part of South Dublin County Council's commitment to the National Biodiversity Action Plan 2021- 2025 and the South Dublin County Council

Biodiversity Action Plan, 2020-2026, the National Planning Framework (NPF)and the East Region Spatial and Economic Strategy (RSES).'

2 METHODOLOGY

2.1 Assessment Methodology for Prediction of Effects

Desk study data collection and field survey work were carried out as part of the EcIA process, with the objective of ensuring that sufficient data was collected to identify the designated sites, habitat areas and species that could be significantly affected by the proposed development. This information then informed the assessment of effects on the potential biodiversity receptors.

The area for which biological data was collected was based on an assessment of the ecological zone of influence of the proposed development. The ecological zone of influence is the area that could be affected by the proposed development, within which there is the potential for significant ecological effects. All SPAs and SACs within 15km have been considered to assess their ecological pathways and functional links. As acknowledged in the OPR guidelines [5], few projects have a Zone of Influence this large, however the identification of Natura 2000 sites within 15km and NHAs and pNHAs within 5km has become widely accepted as the starting point. For this reason, all SPAs and SACs in 15km and NHAs and pNHAs in 5km have been identified for consideration. Desk study data were collected for this area (See Section 4.1), whilst field surveys focused on the site of the Proposed Development (See Section 4.2).

It should be noted that there was the potential for the zone of influence to be redefined during the assessment process in response to new design or environmental information, and / or for the geographical extent of field surveys to be extended to cover a greater extent of the desk study area (e.g. if the desk study identified species occurring offsite that could be significantly affected by the proposed development). In the end, such an increase in the study area was not required for this assessment (see Section 5.2).

The next stage of the assessment was to determine which, if any, of the sites, habitats and species within the zone of influence (referred to in this report as 'potential biodiversity receptors') had the potential to be significantly affected by the proposed development (see Section 5). A high level 'scoping' assessment was then undertaken (see Section 5) to differentiate effects that were sufficiently likely to be significant as to merit more detailed assessment, from those that could be assessed at a less detailed level as they were classified as not likely to be significant (referred to as 'scoped-out' effects).

The assessment of how the potential biodiversity receptors would likely be affected by the environmental changes associated with the proposed development was based not only on the results of the desk study and field surveys, but also on published information on the potential biodiversity receptors' status, distribution, sensitivity to these changes, biology, and knowledge of ecological processes and functions, as appropriate.

2.2 Desk Study

The following literature sources were checked for ecological information:

- The National Parks and Wildlife Service (NPWS) website was consulted with regard to the most up to date detail on conservation objectives for the Natura 2000 sites relevant to this assessment (https://www.npws.ie/) [6];
- The National Biodiversity Data Centre (NBDC) website was consulted with regard to species distributions (https://maps.biodiversityireland.ie/Map) [7]; and,
- The EPA Envision website was consulted to obtain details about watercourses in the vicinity of the Site (https://gis.epa.ie/EPAMaps/) [8].

2.3 Field Survey

2.3.1 Habitat Survey

An initial habitat survey was undertaken on the 6th of November 2020, by two (2No.) suitably qualified MOR Ecologists, with update surveys completed on the 7th of June 2021, and the 14th of March 2022. These surveys aimed to assess the extent and quality of habitats present on the Site and to identify any potential ecological receptors.

The assessment was extended to also identify the potential for these habitats to support other features of nature conservation importance, such as species afforded legal protection under either Irish or European legislation. Based on the habitats present, additional species-specific surveys were also undertaken for both bats and amphibians, please see details below.

2.3.2 Protected / Notable Species

The methodologies used to establish the presence / potential presence of faunal species are summarised below. These relate to those species / biological taxa that the desk study and habitat types present indicated could occur on the Site.

Amphibians

The Site was assessed for its potential to provide sheltering, foraging and breeding habitat for amphibians. These included water bodies suitable for egg-laying, and terrestrial habitats comprising open areas with mixed-height vegetation, such as heathland, rough grassland, open scrub or water body margins. Suitable well drained and frost-free areas are needed to enable amphibians to survive the winter.

Given the presence of waterbodies on the Site that were considered to have the potential to support amphibians, presence / absence surveys for amphibians were undertaken. The following survey methodologies were utilised, and 4 survey visits were undertaken on the 26th of April, 4th of May, 24th of May and 8th of June 2021;

- Refugia Search:

  This will take place in daylight. A refugia search is carried out on the terrestrial area near the pond being surveyed. This includes searching amongst old debris, logs, under rocks and through vegetated areas.

- Egg Search:

  This is conducted before dusk. Systematic search through submerged vegetation for egg wraps. The inspection takes place in daylight hours. If smooth newt egg wrap is found, the search ends to avoid further disturbance.

- Netting:

  This is conducted during daylight. Surveyors, using a long-handled dip net walk the perimeter of the water body (where accessible). If a newt is caught, netting is ceased immediately due to the disruptive nature of netting.

- Torching:

  This is conducted after dusk as newts are most active. Torching is used to determine presence or absence of newts and an estimate the population. A high-powered torch (1 million candle power) is used around the margins of the waterbody to detect newt activity. Up to 15m of netting per 50m of shoreline is undertaken ensure uniformity across surveys.

Badger

The survey aimed to identify and examine areas where badgers (*Meles meles*) might occur by noting any evidence of badger activity. This included:

- Mammal paths;
- Badger hairs caught in sett entrances / fences / vegetation;
- Paw prints;
- Evidence of foraging (usually in the form of 'snuffle holes');
- Latrines; and,
- Badger setts.

Bats

An initial assessment was carried out during the habitat survey for suitability of the habitats within the Site to support bat roosting, foraging and commuting. The inspection was undertaken using close-focusing binoculars and a powerful focused-beam light source.

The following criteria were used to assess mature trees onsite:

- Presence of natural cavities, splits, cracks, loose bark and rot holes in the trunk or boughs of the tree;
- Presence of dense and woody ivy (Hedera helix) growth that could be used by bats for roosting;
- Evidence of bat droppings, which may also be seen as a black streak beneath holes, cracks, branches, etc; and,
- Presence of smooth edges with dark marks and urine stains at potential entrances to roosts.

Given the presence of features suitable for roosting bats, follow up Dusk emergence and activity surveys were undertaken for the Site to confirm if any of the trees were being used by roosting bats and to establish the level and type of activity onsite. These surveys were conducted on the 24th of May 2021 and the 8th of June 2021.

All survey were undertaken in accordance with recognised best practice (Full details of the survey methodology are provide in Appendix B)

Birds

The Site was assessed for its potential to support important assemblages of birds of rare or notable species. Surveys aimed to identify and examine areas where wintering and breeding birds might occur. Any activity and potential nesting habitats were noted.

Otter

The survey aimed to identify and examine areas where otter might occur by noting any evidence of otter observed. Evidence of otter searched for included:

- Holts (features log piles, caves and cavities);
- Slides (flattered areas of mud or vegetation);
- Paw prints;
- Evidence of foraging (usually in the form of feeding remains such as fish scales, shellfish, etc.); and,
- Spraints.

Invasive species

The Site was assessed for the presence of any noxious / invasive species such as Japanese knotweed (*Fallopia japonica*) and any other invasive species.

Other Species

In addition, an assessment was carried out of the potential for the Site to support any other species considered to be of value for biodiversity.

2.3.3 Survey Limitations

No Survey Limitations were encountered.

2.4 Consultation

Consultation was undertaken as part of the design phase and initial assessment of the Site and a pre-planning meeting was held on the 1st of April 2021 with South Dublin County Council.

The consultation and information provided was used to inform and refine the scope of the assessment undertaken and to develop appropriate mitigation measures for the proposed development, where necessary.

The key requirement in relation to biodiversity was to maintain a landscape buffer between the Site and the drainage ditch network.

A preplanning submission was sent to the South Dublin County Council on the 8th of April, 2022. No response has yet been received.

2.5 Assessment Methodology

The current Guidelines for Ecological Impact Assessment in the UK and Ireland [9] recognise that an ecological assessment cannot consider in detail every individual species or habitat that may potentially be affected by a proposed development. The EcIA process aims to identify those ecological receptors that could be significantly affected by the proposed development i.e. where the effects on the receptor are of sufficient concern that they could influence the planning decision) or for which the development could result in the breach of relevant legislation. The effects of the proposed development on these receptors are then assessed, taking into account the sensitive design measures (avoidance measures) and where necessary the mitigation measures incorporated as part of the proposed development. The scope of the EcIA is determined iteratively.

2.5.1 Significance Evaluation Methodology

As part of the high-level assessment reported in Section 5.1, the conclusion about whether effects are sufficiently likely to be significant as to merit more detailed assessment is informed by a judgement about whether:

- The Site, habitat or species population is of sufficient quality or size that an effect upon it could be significant; and,
- The environmental changes associated with the development are such that there is the potential for a significant effect to occur (i.e. for the integrity of a site or for the conservation status of a habitat area or species population to be affected).

If the answer to both of these questions is yes, the relevant receptor would be subject to more detailed assessment and the significance of effects would be evaluated based on the methodology that is outlined below.

2.5.1.1 Negative Effects

For biodiversity receptors, an effect is assessed as being significant if the favourable conservation status of the specified biodiversity receptor is compromised by the proposed development. Conservation status is defined by CIEEM (2016) as follows:

- "*Habitats – conservation status is determined by the sum of the influences acting on the habitat that may affect its extent, structure and functions as well as its distribution and its typical species within a given geographical area*;" and,
- "*Species – conservation status is determined by the sum of influences acting on the species concerned that may affect its abundance and distribution within a given geographical area.*"

The decision as to whether the conservation status of the specified biodiversity receptor has been compromised has been made using professional judgement, drawing upon the results of the assessment of how each receptor will be affected by the proposed development.

A similar procedure has been used for designated sites that are affected by the proposed development, except that the focus is on the effects on the integrity of each site, defined as "the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and / or the levels of populations of the species for which it was designated."

2.5.1.2 Positive Effects

A positive effect is assessed as being 'significant' if development activities are predicted to cause:

- An improvement in the condition of a habitat / species population from unfavourable to favourable – condition data are only available for some Natura sites, but professional judgement and a review of available literature has been used to apply the same principle to habitats / species elsewhere; or,
- Partial or total restoration of a site's favourable condition.

If a species population, habitat or site is already in favourable condition, it is still possible for there to be a significant positive effect. There is however no simple formula for determining when such effects are significant, given the complexities of assessing these types of effects. In such cases, decisions about significance have therefore been made on a case-by-case basis.

2.6 Identification of Potential Biodiversity Receptors

The assessment of the ecological zone of influence of the proposed development concluded that the development would be likely to result in changes in the extent and / or condition of the existing land cover on the Site, with potential effects on habitats and species on the Site. There is also the potential for effects on any areas that adjoin the Site, where fauna might make use of the land cover onsite.

The potential for offsite changes in noise and dust deposition was also assessed. It was concluded that, with the dust and noise control measures that have been built into the proposed development proposals, which will be important for avoiding significant effects on people as well as biodiversity, there will be no likelihood of significant effects associated with either dust or noise.

In summary, therefore, the ecological zone of influence of the proposed development is defined as:

- The Site of the Proposed Development (fauna and flora); and,
- Habitats adjoining the Site (fauna).

In the case of designated sites, a precautionary approach has been taken and the search area extended to identify sites outside of the zone of ecological influence. This information was used to further inform the assessment process and to ensure that the onsite habitats are not of importance for either habitats or species for which these sites have been designated.

As a basis for determining which biodiversity receptors need to be assessed within the zone of influence of the development, CIEEM's guidelines on EcIA recommend that consideration be given to the biodiversity conservation value of the sites, habitats and species that occur within the zone (as appropriate). The guidelines also refer to the need to consider the legal status that is afforded to some species and habitats (See Box 1).

Legal status needs to be considered because all developments must comply with the requirements of the law. By implication, therefore, there cannot be significant effects as a result of non-compliance with the law. However, it should be noted that, notwithstanding legal requirements, there is the potential for some legally protected species to be significantly affected in relation to their biodiversity conservation value.

In relation to biodiversity conservation value, only those designated sites, habitat types and species that fall within one or more of the categories defined in Box 1 are of sufficient importance that they could be significantly affected by the proposed development.

Drawing upon the biological data assembled for the purposes of this EcIA (Section 4), the potential receptors in relation to the proposed development are discussed in Section 5.

3 DESCRIPTION OF THE PROJECT

3.1 Site Context

The Site is located within the townlands of Ballybane, Dublin 22, in the Profile Park business park. The Site of the Proposed Development is ca.2.649 hectares (ha). Under the South Dublin County Development Plan 2016-2022, the Site is zoned under objective EE which aims to, '*provide for enterprise and employment related uses.*'

The Site is accessed from the existing Site entrance on the Profile Park Road, which borders the western Site Boundary, via the R134 Regional Road that runs parallel to the northern Site boundary.

The Site currently comprises a construction compound, and disturbed ground and spoil heaps, which are currently overgrown with vegetation. A drainage ditch runs along the southern and eastern Site boundary adjacent to a mature hedgerow / treeline. The Baldonnell Stream is located within close proximity to the southwest corner of the Site. The Grange Castle Golf Club borders the southern and eastern Site boundaries.

3.2 Watercourses within the Vicinity of the Site

The Site is situated within the Liffey and Dublin Bay Catchment [Catchment_ID: 09] and the Liffey_SC_090 subcatchment [Subcatchment_ID: 09_15] [8].

There is one hydrological feature of note within the vicinity of the Site. The Baldonnell Stream is located adjacent to the southwestern corner of the Site.

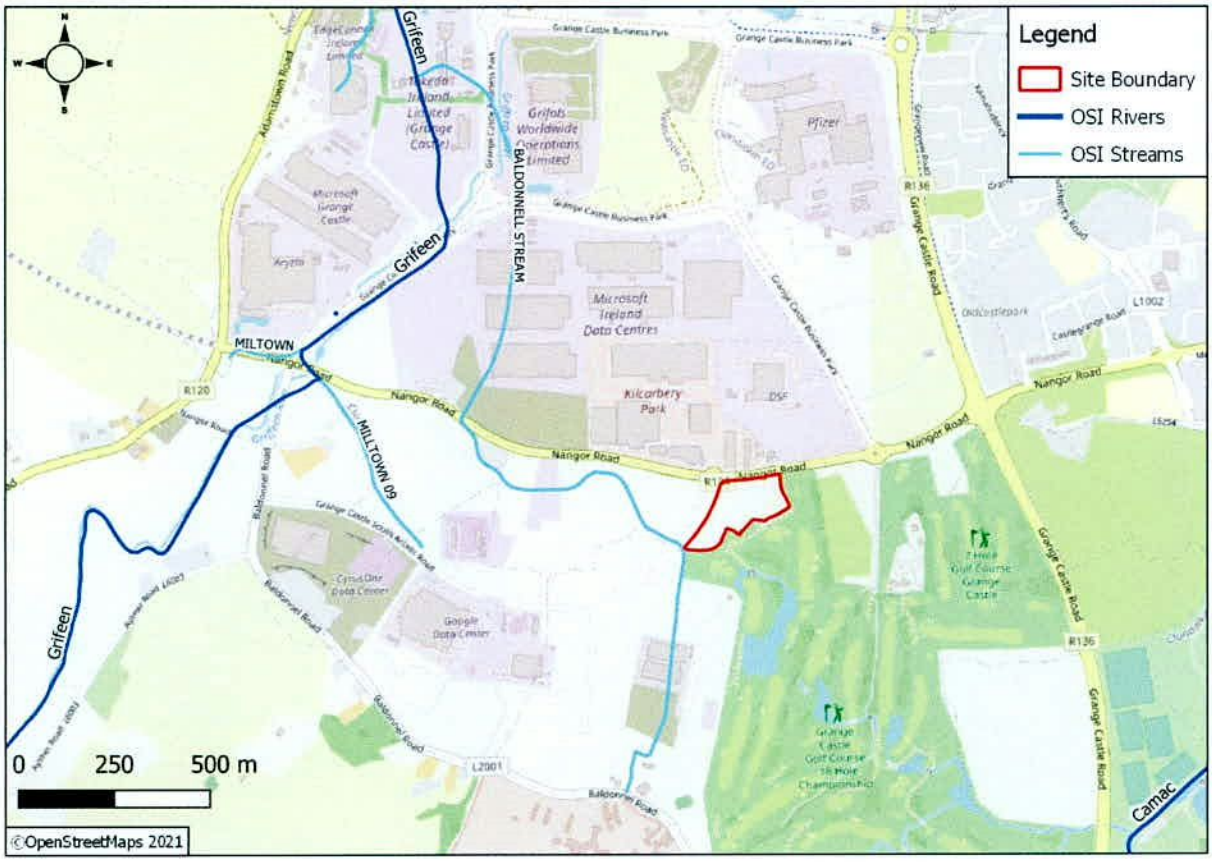
The Baldonnell Stream is a tributary to the Grifeen River and flows in a north / north-westerly direction for ca. 1.9km prior to discharging into the river. The Grifeen River flows in a northerly direction for ca. 4.2km from this convergence point, crossing under the Grand Canal through a siphon system, before discharge into the River Liffey at the Lucan Weir.

The River Liffey flows for ca. 21.1km from the weir before discharging into Dublin Bay. Dublin Bay is located 27.2km downstream of the Site and forms part of the South Dublin Bay SAC, the South Dublin Bay and River Tolka Estuary SPA, the North Dublin Bay SAC and the North Bull Island SPA.

According to the EPA 2013-2018 water monitoring events, the most up-to-date data at the time of writing this report, the Baldonnell Stream, the Grifeen River and the section of the River Liffey where the Grifeen River joins have '*good*' water quality status but their risk of not achieving a high water quality status is currently under *'review'* [8]. However, further downstream (ca.6.8km from the Site) the River Liffey is considered to be '*at risk*' with an unassigned water quality [8].

The waterbodies within the vicinity of the Site are presented in Figure 3-1 below.

Figure 3-1: Watercourses in the Vicinity of the Site



3.3 Drainage Ditch

A drainage ditch borders the southern and eastern boundary of the Proposed Development. The majority of this drainage ditch is fry; however, the western section of this ditch, where it discharges into the Baldonnell Stream, was wet at the time of survey.

3.4 Granted Planning

The following development has been granted planning permission under the South Dublin County Council (ref. SD21A/0186) within the Site boundary. The following elements are proposed for construction as part of this development:

- Construction of a 3 storey (part 4 storey) data centre known as 'DB8.' The total gross floor area excluding hot air plenums and external staircase is ca.9,601m^2. The overall height of the data centre ranges from ca.16m to ca.20m to roof level and ca.20m to ca.24m including roof top plant, flues and lift overrun. This building will include:
    - Data halls,
    - Electrical / plant rooms,
    - Offices,
    - Lobbies,
    - Ancillary staff areas including breakrooms and toilets,
    - Stores,
    - Stair/lift cores throughout and photovoltaic panels at roof level.

- Provision of 5No. external generators, 8No. x 75m^3 fuel tanks and ancillary plant contained within a plant yard to the north of DB8;
- Provision of a water tank plant room, air cooled chillers and ancillary plant contained within a chiller plant yard to the south of DB8;
- Provision of a sprinkler pump room (ca.23m^2), 2No. sprinkler tanks (ca.12m high each), heat recovery plant room (ca.17m^2), ESB substation (ca.44m^2), waste/bin stores (ca.52m^2). Total floor area of ancillary structures and plant (ca.303m^2);
- Provision of a delivery yard and loading bays, 64No. car parking spaces, 5No. motorcycle spaces, bicycle shelter serving 14No. spaces, smoke shelter, internal access roads and footpaths, vehicular and pedestrian access to the west from Falcon Avenue and closure of an existing vehicular entrance from Falcon Avenue; and,
- All associated Site development works, services provision, drainage works including attenuation, landscape and boundary treatment works including berming, hedgerow protection areas and security fencing.

3.5 Proposed Development

The Proposed Development will consist of:

- Modifications to the permitted data centre granted under SDCC Reg. Ref. SD21A/0186 comprising the following:
    - Reconfiguration and alteration to the data centre building to include removal of frint of house offices at third floor level, alterations to floor levels at second floor to provide consistency between front of house and data halls, parapet height increase of front of house to ca.16.8m, provision of storage at second floor level in lieu of relocated internal generators to the external generator yard and associated elevational alterations.
    - Extension of loading dock at ground floor level by ca.60m^2 in area with minor height increase to ca.5.3m.
    - Removal of 3No. air plenums to the front (north) elevation and provision of screening to generator flues in lieu of omitted plenums.
    - Alterations at roof level to include removal of 2m high gantry screening.
    - Alterations to the permitted generator plant yard to the north of the data centre to include the removal of fuel tanks, reconfiguration of plant and generators, provision of 2No. additional external generators (increase from 5 to 9No. external generators), provision of 4No. additional external plant rooms, provision of diesel pump tank cabinets and stepover, relocation of generator yard doors and enlarged generator yard to accommodate the proposed modifications.
    - Reconfiguration of plant within the permitted chiller plant yard to the south of the data centres.
    - Removal of 1No. sprinkler/ water tank and removal of stairs and door to the side of the waster compound.
    - Reconfiguration of car parking and motorcycle spaces and removal of 1No. accessible space. 64No. total number of car parking spaces.
- The proposal also includes provision of on-site gas power generation compound (ca.2604m^2 in area) in the area previously reserved for a future data centre. The compound comprises 7No.modular plant rooms (totalling ca.180m^2 in area), 10No.

gas fired generators and associated flues ca.14.7m high, gas skid, associated modular plant, boundary treatment surrounding the compound ca.6.5m high and 2No. vehicular access points including general and emergency access.

- All associated site development works, services provision, drainage works, access, landscaping and boundary treatment works.
- No buildings are proposed above the existing ESB and SDCC wayleaves to the west and north of the Site.
- Overall Gross Floor Area of the development is reduced by ca.44m^2 to ca. 9795m^2 from previously permitted under SDCC Reg. Ref. SD21A/0186.

Refer to Appendix A for Site Layout.

3.5.1 Drainage

3.5.1.1 Surface Water

The runoff generated from the Proposed Development and surface water storage requirements have already been included in the Site attenuation pond and overall drainage scheme of the Site, as granted under under Planning Registration No. SD21A/0186. Thus, no additional attenuation storage elements are required for the proposed OSPG development, in order to meet the GDSDS requirements.

All stormwater from the Proposed Development will drain by pipes, gulley's and channels towards the attenuation pond where storage capacity for a 1:100yr storm event +20% climate change has already been catered for. The attenuation pond provides a storage volume of circa 756m^3 and is adequately sized to cater for the Proposed Development, particularly as this area was considered as being 100% hardstanding under the aforementioned granted application and now this area consists largely of concrete plinths and gravel type surfaces.

As per the granted development, prior to reaching the proposed attenuation pond, stormwater from the carpark and access roads will be directed through an appropriately sized and approved petrol interceptor.

A hydrobrake will ensure that water discharging to the drainage ditches surrounding the Site is kept to green-field runoff rates at 3.9l/s. The engineering report for the granted development (SD21A/0186) stated that this ditch network has capacity to accommodate the proposed discharge from the Site.

3.5.2 External Lighting

The external lighting will be installed as per the original grant of planning (Planning Registration No. SD21A/0186.

3.5.3 Landscaping

The Proposed Development design includes for landscaping works. The proposed layout masterplan, reference DB080-MA-LS-XX-DR-L-PLNT-1050, presents both boundary and internal Site breakout landscaping works.

3.6 Construction Procedures

During the construction phase, the methods of working will comply with all relevant legislation and best practice guidelines in reducing the environmental adverse effects of the works. Although construction phase adverse effects are generally of a short-term duration and are localised in nature, the adverse effects will be reduced as far as practicable through compliance with current construction industry guidelines.

A Construction Environmental Management Plan (CEMP) has been prepared and submitted as part of this apparition for the proposed works. The following Construction Industry Research and Information Association (CIRIA) guidance has been referred to and will be adhered to during the construction phase of the project to prevent water pollution:

- C532 – Control of Water Pollution from Construction, Guidance for Consultants and Contractors [10];
- CIRIA C741- Environmental Good Practice on Site (4th edition) [11];
- Guidance for the Treatment of Bats Prior to the Construction of National Road Schemes [12]; and,
- Guidance for the Treatment of Badgers Prior to the Construction of National Road Schemes [13].
- Guidelines on the Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads [14]; and,
- All works will be undertaken in accordance with the 'Requirements for the Protection of Fisheries Habitat during Construction and Development' [15].

A temporary construction compound will be set up within the northern section of the Site away from the Baldonnell Stream.

Works will be limited to:

- Monday - Friday 07:00 hours – 19:00 hours
- Saturday 09:00 hours – 13:00 hours
- Sundays and Public Holidays Closed

An Ecological Clerk of Works (ECoW) will be appointed to the project and inspect the Site in advance of works commencing and will undertake monthly Site inspections during the works as well as being present during any works adjacent to or near waterbodies or treelines to ensure that these works are completed in line with the mitigation measures detailed within this EcIA, the CEMP and the NIS.

3.6.1 Temporary Compound

A temporary construction compound will be set up within the northern section of the Site away from the Baldonnell Stream.

4 STUDY RESULTS

4.1 Desk Based Study

Prior to conducting any Site surveys, a desk-based review of information sources was completed. This baseline information provided a valuable insight into the types of flora and fauna that may occur onsite and allowed for the identification of features / habitats located offsite that may require further assessment.

4.1.1 Statutory Nature Conservation Sites

In accordance with the European Commission Methodological Guidance [16] and objectives HCL12 and HCL15 of the SDCDP [3], a list of European sites that can be potentially affected by the Proposed Development has been compiled. Guidance for Planning Authorities prepared by the Department of Environment Heritage and Local Government [17] states that defining the likely zone of impact for the screening and the approach used will depend on the nature, size, location, and the likely effects of the project. The key variables determining whether or not a particular Natura 2000 site is likely to be negatively affected by a project are:

- the physical distance from the project to the Natura 2000 site;
- the sensitivities of the ecological receptors; and,
- the potential for in-combination effects.

All SPAs and SACs within 15km have been considered to assess their ecological pathways and functional links. As acknowledged in the OPR guidelines [18], few projects have a Zone of Influence this large, however the identification of Natura 2000 sites within 15km has become widely accepted as the starting point for the screening process. For this reason, all SPAs and SACs in 15km have been identified for consideration as part of the screening.

Seven (7No.) Natura 2000 designated sites were identified within 15km of the Site (Figure 4-2, Table 4-1).

Figure 4-1 Natura 2000 Sites within 15km

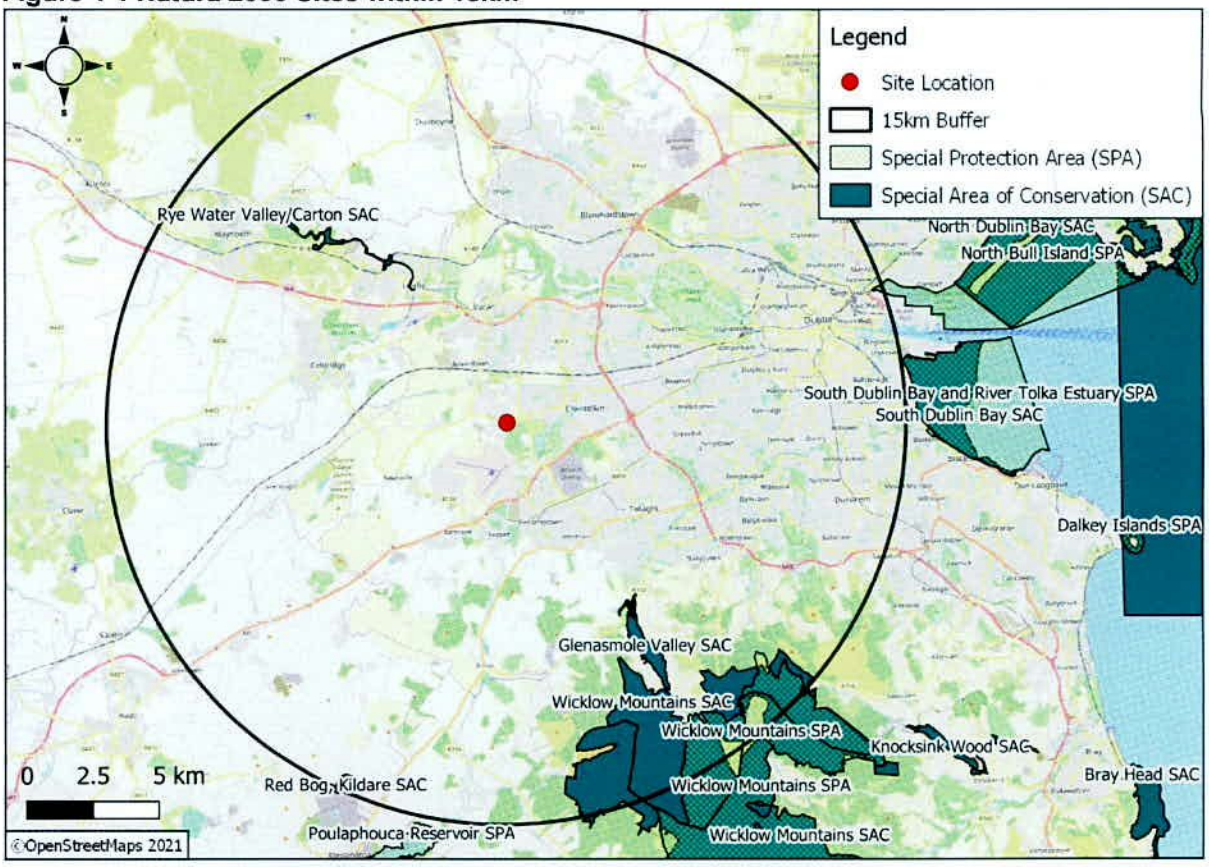


Table 4-1 Natura 2000 Designated Sites within 15km of the Site

Site Name	Code	Distance (km)	Direction from the Site
Special Areas of Conservation (SAC)			
Glenasmole Valley	001209	7.9km	SE
Wicklow Mountains	002122	9.7km	SE
Rye Water Valley / Carton	001398	6.0km	NW
Red Bog, Kildare	000397	14.4km	SW
South Dublin Bay	000210	15km	E
Special Protection Area (SPA)			
Wicklow Mountains	004040	12.7km	SE
South Dublin Bay and River Tolka Estuary	004024	14.7km	E

The Site is not located within or directly adjacent to any Natura 2000 sites, however, the boundaries of the five (5No.) SACs and two (2 No.) SPAs are located within 15km from the Site.

Given the distance, intervening lands and lack of impact pathways between the Site and the Glenasmole Valley SAC, Wicklow Mountains SAC, Rye Water Valley / Carton SAC, Red Bog,

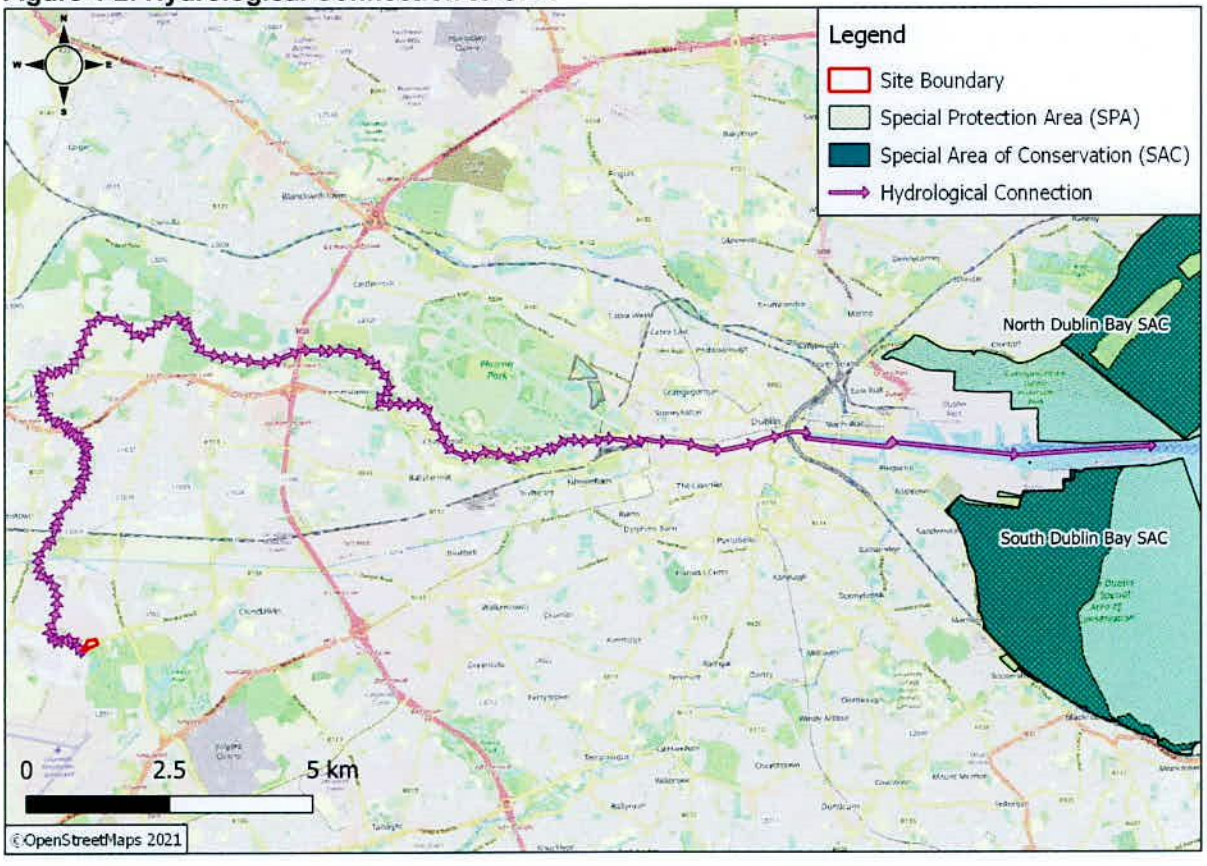
Kildare SAC and the Wicklow Mountains SPA, these Natura 2000 sites have been screened out from further consideration.

The Site is hydrologically connected to the South Dublin Bay SAC, the South Dublin Bay and River Tolka Estuary SPA via the Baldonnell Stream which discharges into the Grifeen River, the River Liffey and eventually drains into Dublin Bay, refer to Figure 4-2. It should also be noted that North Dublin Bay SAC and North Bull Island SPA form part of Dublin Bay and are located ca.19km northeast of the Site.

Although the South Dublin Bay SAC is also located downstream and within 15km of the Site, it is not considered that this Natura 2000 site could be affected by the proposed development considering the Great South Wall separates any water discharging into Dublin Port from the South Dublin Bay Annex I Habitats. Therefore, any pollutants in the bay would have to circumvent the breakwater and travel through a considerable expanse of open water to reach this Natura 2000 site. A similar breakwater in the form of North Bull Wall protects the North Dublin Bay SAC and North Bull Island SPA from potential pollutants. Therefore, these Natura 2000 sites have been screened out from further consideration.

However, areas of wetland habitat that make up the South Dublin Bay and River Tolka Estuary SPA are found on the Liffey side of the Great South Wall and the North Bull Wall and therefore could be affected by a major pollution event (albeit unlikely considering the Site is ca. 27.2km upstream). Given this hydrological connection to the South Dublin Bay and River Tolka Estuary SPA, this Natura 2000 site will be given further consideration to assess potential impacts resulting from the proposed development.

Figure 4-2: Hydrological Connection to SPA



4.1.2 Nationally Designated Conservation Sites

There are no Natural Heritage Areas (NHA) located within 5km of the Site. However, there are two (2No.) proposed Natural Heritage Area (pNHA) identified within 5km of the Site (refer to Figure 4-3 and Table 4-2).

Figure 4-3: Nationally Protected Sites within 5km

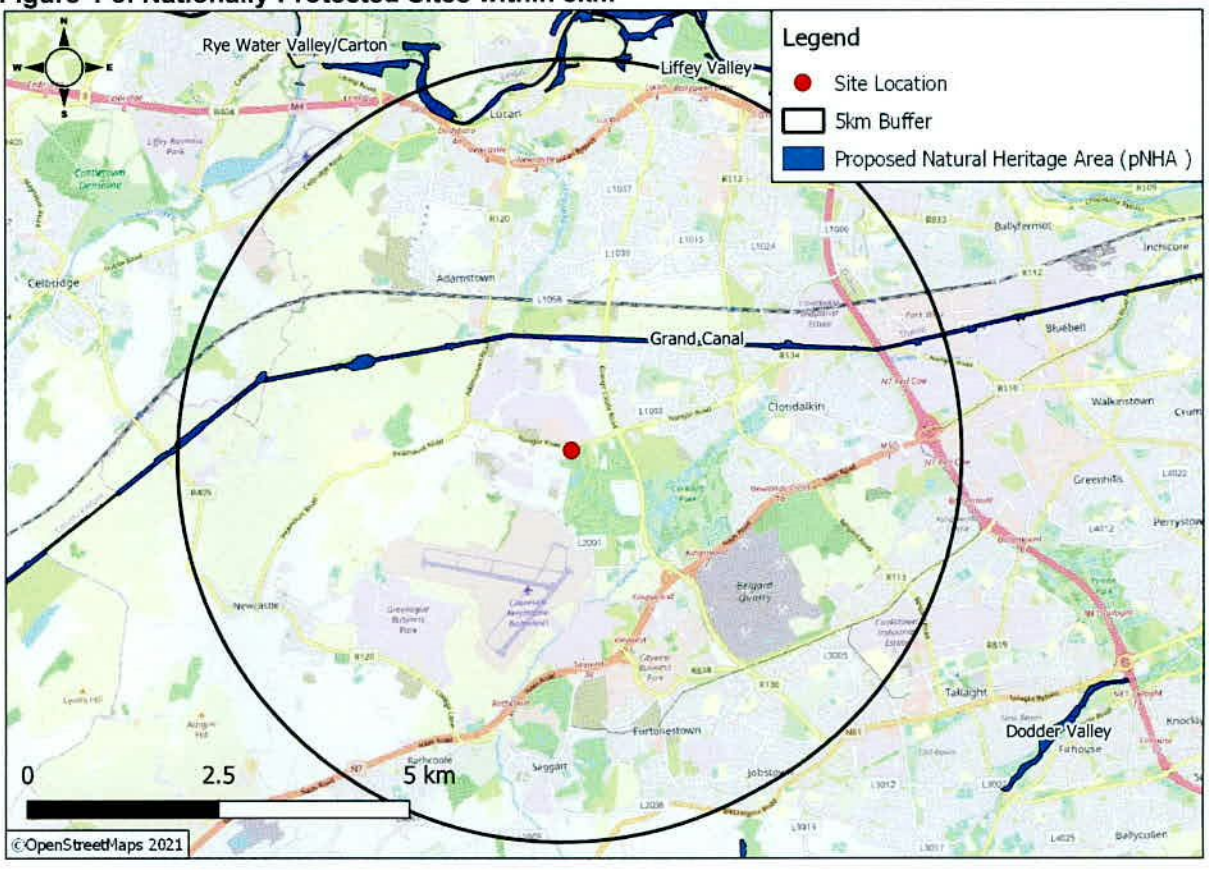


Table 4-2: National Protected Sites within 5km

Site Name	Code	Distance (km)	Direction from the Site
Proposed National Heritage Areas (pNHA)			
Grand Canal	002104	1.5km	N
Liffey Valley	000128	4.6km	N

4.1.3 Protected Species

According to the NBDC, the Site is located within an area of moderate bat suitability, ranging from 21.3 – 28.1 [7].

Table 4-3 provides a summary of records of legally protected or otherwise notable species that occur within a 2km grid square of the Site boundary [7].

Table 4-3: NBDC Species within 2km of the Site

Common Name	*Scientific Name*	Date of last record	Designation
Bird Species			
Barn Swallow	*Hirundo rustica*	07/05/2016	Wildlife Acts 1976 / 2000 Birds of Conservation Concern Amber List

Common Name	*Scientific Name*	Date of last record	Designation
Common Coot	*Fulica atra*	13/01/2018	Wildlife Acts 1976 / 2000 Birds of Conservation Concern Amber List
Common Starling	*Sturnus vulgaris*	16/09/2017	Wildlife Acts 1976 / 2000 Birds of Conservation Concern Amber List
Common Swift	*Apus apus*	07/05/2016	Wildlife Acts 1976 / 2000 Birds of Conservation Concern Amber List
Common Wood Pigeon	*Columba palumbus*	28/03/2013	Wildlife Acts 1976 / 2000
House Martin	*Delichon urbicum*	14/07/2017	Wildlife Acts 1976 / 2000 Birds of Conservation Concern Amber List
Sand Martin	*Riparia riparia*	07/05/2016	Wildlife Acts 1976 / 2000 Birds of Conservation Concern Amber List
Bat Species			
Daubenton's Bat	*Myotis daubentonii*	19/08/2013	Wildlife Acts 1976 / 2000 EU Habitats Directive Annex IV
Soprano Pipistrelle	*Pipistrellus pygmaeus*	19/08/2013	Wildlife Acts 1976 / 2000 EU Habitats Directive Annex IV
Terrestrial			
Eurasian Pygmy Shrew	*Sorex minutus*	14/08/2012	Wildlife Acts 1976 / 2000
Pine Marten	*Martes martes*	25/06/2020	Wildlife Acts 1976 / 2000 EU Habitats Directive Annex V
West European Hedgehog	*Erinaceus europaeus*	20/05/2021	Wildlife Acts 1976 / 2000
Amphibians / Aquatic			
Freshwater White-clawed Crayfish	*Austropotamobius pallipes*	18/08/2013	Wildlife Acts 1976 / 2000 EU Habitats Directive Annex V
Invasive species			
American Mink	*Mustela vison*	30/07/2018	High Impact Invasive Species Regulation S.I. 477 (Ireland)
Eastern Grey Squirrel	*Sciurus carolinensis*	31/12/2017	High Impact Invasive Species Regulation S.I. 477 (Ireland)
Indian Balsam	*Impatiens glandulifera*	24/08/2021	High Impact Invasive Species Regulation S.I. 477 (Ireland)
Japanese Knotweed	*Fallopia japonica*	07/05/2016	High Impact Invasive Species Regulation S.I. 477 (Ireland)
Spanish Bluebell	*Hyacinthoides hispanica*	07/05/2016	Invasive Species Regulation S.I. 477 (Ireland)
Three Cornered Garlic	*Allium triquetrum*	01/05/2021	Medium Impact Invasive Species Regulation S.I. 477 (Ireland)

*Note: Table includes records of protected species recorded within the last 10 years.

**Note: Table includes only invasive species regulated under S.I. 477 (Ireland).

4.2 Field Survey

4.2.1 Habitats

Site Context and Surrounding Habitats

The Site is situated within the Profile Park business park. The Site is bordered by the R134 regional road to the north, the Profile Park Road to the west and the Grange Castle Golf Club to the south and east.

The Site is comprised primarily of a construction compound, disturbed ground and spoil heaps, which have grown over with vegetation. There is also a drainage ditch and hedgerow bordering the southern and eastern Site boundary, separating the Site from the golf course.

A description of the habitats and features of ecological significance are outlined below, and their distribution is illustrated in Figure 4-4.

Artificial Surfaces (BL3)

Artificial surfaces are located within the north-western portion of the Site, there is also a smaller area of compacted ground located in the north-eastern portion of the Site. These areas of artificial surfaces comprise of hard standing and bare ground. There is limited vegetation growth within these areas given the nature of these habitats and recent disturbances at the Site.

Recolonising Bare Ground (ED3)

Areas of recolonising bare ground were noted throughout the Site. The overall Site had been previously disturbed and currently vegetation growth has reclaimed these areas.

The recolonising vegetation includes perennial ryegrass (*Lolium perenne*), Yorkshire fog (*Holcus lanatus*), cocksfoot (*Dactylis glomerata*), creeping buttercup (*Ranunculus repens*), lady's thumb (*Persicaria maculosa*), nettle (*Urtica dioica*), dandelion (*Taraxacum vulgaria),* common hogweed (*Heracleum sphondylium*), prickly sowthistle (*Sonchus asper*), ragwort (*Senecio jacobaea*), ribwort plantain (*Plantago lanceolata*), coltsfoot (*Tussilago farfara*), rush species (*Juncus spp.*), bramble (*Rubus fructicosus*), hedge bindweed (*Calystegia sepium*), daisy (*Bellis perennis*), common vetch (*Vicia sativa*), European beech saplings (*Fagus sylvatica*), ground ivy (*Glechoma hederacea*), bittersweet (*Solanum dulcamara*), poppy (*Papaver rhoeas*), fringed willowherb (*Epilobium ciliatum*), sun spurge (*Euphorbia helioscopia*), common fumitory (*Fumaria officinalis*), shepherd's purse (*Capsella bursa-pastoris*), cutleaf geranium (*Geranium dissectum*) and shortpod mustard (*Hirschfeldia incana*).

Spoil and Bare Ground (ED2)

Spoil heaps are located within the central portion of the Site and were classified as spoil and bare ground. Also, areas of bare ground were identified within the centre of the spoil heaps and along the northern Site boundary, which seems to act as an access track between the construction compounds.

Species identified within this habitat include fringed willowherb, bramble, poppy, hedge bindweed, ground ivy, nettle, creeping buttercup, wild mustard (*Sinapis arvensis*), butterfly bush (*Buddleja davidii*), willow saplings (*Salix spp.*), elder saplings (*Sambucus nigra*) and rushes (*Juncus spp.*).

Hedgerow / Treeline (WL1 / WL2)

The eastern and southern Site boundary is made up of a mature hedgerow / treeline. This habitat is comprised of predominantly ash (*Fraxinus excelsior*), hawthorn (*Crataegus monogyna*), holly (*Ilex aquifolium),* sycamore (*Acer pseudoplatanus*) and willow.

Brambles (*Rubus fructicosus*) and nettles (*Urtica dioica*) are frequent in the understorey layer throughout. Ivy (*Hedera hibernica*) is common both in the trees and in the ground layers. An array of herbaceous species was recorded in the ground layer of the hedgerows, including ground ivy, common vetch, creeping buttercup and willow herb.

Drainage Ditches (FW4)

A drainage ditch borders the Site along the southern and eastern Site boundary. The drainage ditch discharges into the Baldonnell Stream in the south-western corner of the Site.

At the time of the survey, the western section of the drainage ditch along the southern Site boundary was wet and there was a steady flow of water towards the Baldonnell Stream. There seemed to be a connection from the Grange Castle Golf Course discharging into this drainage ditch as well. The drainage ditch along the southern Site boundary is steep sided, approximately 0.5-1m deep. This section of the drainage ditch was heavily shaded by the hedgerow / treeline.

However, the section of the drainage ditch along the eastern Site boundary was drier and there was no discernible flow of water. The drainage ditch along this section was also shallower, only 0.5m deep at its deepest point.

The species identified growing along the sides of the drainage ditches included ivy, bramble, fringed willowherb, common hogweed and butterfly bush. Floating plants within the drainage ditch included common duckweed (*Lemna minor*) and watercress (*Nasturtium officinale*).

The drainage ditch is currently fenced off with a silt fence, however, the fences are currently in disrepair and as such are not effective.

Surface Water Ponds

Surface water ponds were noted throughout the Site. These temporary shallow wet areas were dominated by rushes, broadleaf cattail (*Typha latifolia*) and algae.

Figure 4-4: Habitat Map

4.2.2 Fauna

Amphibians

The NBDC does not hold any records of common frog within 2km of the Site [7].

During the targeted amphibian surveys in 2021, two surface water ponds onsite were assessed (TN1, Figure 4-4). No amphibians were recorded utilising either of these waterbodies. It should be noted that following a period of dry weather, these ponds had decreased in size and two surface water ponds identified during the initial site walkover had completely dried out. Given the lack of aquatic invertebrates noted in these waterbodies, it can be concluded that these waterbodies are temporary in nature.

A common frog was observed in the drainage ditch bordering the Site in 2021 (TN2, Figure 4-4).

During the 2022 Site walkover, frog spawn (TN3, Figure 4-4) was noted in the stagnant drainage ditch at the southern boundary of the Site.

Badger

The NBDC does not hold any records for badger within 2km of the Site [7]. The Site survey did not identify any definitive evidence of badger activity within the Site boundary.

As badgers are common and widespread across Ireland, it is considered possible that badgers may commute through the Site. However, it is considered unlikely that the Site is of value to this species.

Bats

According to the NBDC, the Site is located within an area of moderate bat suitability and two (2No.) bat species – Daubenton's bat and soprano pipistrelle – were identified within 2km of the Site [7].

The targeted bat surveys did not identify any bat roosts onsite and identified only commuting / foraging activity.

The majority of activity recorded onsite was along the existing hedgerow /treeline and within the golf course located to the east of the Site. The following bat species were noted commuting / foraging during these surveys: lesser noctule, pipistrelle and soprano pipistrelle. Lesser noctule was the most active species recorded. Please see Appendix B – Bat report for further details.

Birds

Given the nature of the Site and the onsite habitats, the Site is not considered suitable for any of the bird species designated for the South Dublin Bay and River Tolka Estuary. However, the hedgerow / treeline located onsite has the potential to provide suitable nesting sites for a range of common bird species.

The birds recorded onsite include blackbird (*Turdus merula*), blue tit (*Cyanistes caeruleus*), bullfinch (*Pyrrhula pyrrhula*), garden warbler (*Sylvia borin*), hooded crow (*Corvus cornix*), magpie (*Pica pica*), raven (*Corvus corax*), robin (*Erithacus rubecula*), rook (*Corvus frugilegus*) and woodpigeon (*Columba palumbus*). These species are common species within Ireland.

Otter

The NBDC do not hold records for otter within 2km of the Site from the last 10 years [7]. During the Site walkover, no evidence of otter was identified within the drainage ditch and no suitable habitats for otter were found onsite or the surrounding area.

However, there is a potential indirect hydrological link between the Site and watercourses further down the catchment which potentially support otter.

Invasive Species

No invasive species were noted within the study area.

Other Species

The NBDC holds records of protected and notable mammals within 2km of the Site [7].

Hedgehogs and pygmy shrews are common and widespread species that typically occur in scrub, woodland and rank grassland habitats. Both of these species have been recorded within 2km of the Site [7]. However, most of the habitats onsite are not considered suitable for these species given the recolonising vegetation / bare ground and the damp ground conditions. In addition, no evidence of this species was identified onsite. However, the hedgerow / treeline bounding the Site has the potential to support foraging and commuting hedgehogs and pygmy shrews.

According to the NBDC, pine martens have been recorded within 2km of the Site [7]. As pine martens display a preference for woodland habitats, therefore, the onsite habitats are not considered optimal for this species. Although pine martens have been recorded in scrub and other habitats, no evidence of this species was identified onsite within the recolonising vegetation / bare ground.

A fox dropping was identified on reeds within one of the onsite surface water ponds. It is likely that foxes forage and commute within the Site. No fox dens were identified within the Site.

White-clawed crayfish have been identified within 2km of the Site [7]. However, these recordings are from waterbodies unrelated to the Site and therefore, this species is not considered relevant to this project. It should be noted that aquatic surveys conducted on the Baldonnell Stream for a nearby proposed development (Planning Application No.: SD21A/0217) did not identify any notable or protected species within the Baldonnell Stream [19].

5 CHARACTERISTICS AND POTENTIAL IMPACTS OF THE PROPOSED WORKS AND MITIGATION MEASURES

5.1 Potential Impacts

Based on the methodology that is set out in Section 2, Table 5-1 sets out the findings of the evaluation of important and legally protected receptors. Each receptor is assessed and a scoping justification for each receptor is provided for the Construction and operational Phases.

Table 5-1: Valuation of Potential Ecological Receptors

Potential Biodiversity Receptor	Relevant Legislation	Valuation	Scoping Result and Justification
Protected Sites			
Natura 2000 Sites	European Communities (Natural Habitats) Regulations 1997 (as amended)	Internationally designated sites for conservation.	A Natura Impact Statement (NIS) was prepared as part of the overall planning application, in line with objectives HCL12 and HCL15 of the SDCDP [3]. The NIS concluded that the Proposed Development would not cause any significant adverse effects on any European designated sites or any of their designated features of interest provided the mitigation measures incorporated within the NIS are adhered to and that progression to Stage 3 of the Appropriate Assessment process (i.e. Assessment of Alternative Solutions) was not considered necessary. This receptor has been scoped out from further consideration as part of this EcIA.
Nationally Designated Sites	Wildlife Act 2000 (as amended)	Nationally designated sites for conservation.	There are no NHAs within 5km of the Site; however, there are two (2No.) pNHAs. These sites were included in this assessment in-line with objective HCL13 of the SDCDP [3]. Given the nature and scale of the proposed development, the water quality protection mitigation measures which will be put in place (see Section 5.2.1.1 and 5.2.2.1) and the nature of the habitats and features of interest for which the pNHAs have been designated, it has been concluded that no significant impacts are likely to occur to these sites. Therefore, this receptor has been scoped out from further consideration.
Habitats			
Artificial Surfaces (BL3)	N/A	No Local Value	This habitat has no ecological value, subsequently, any alteration / loss of this habitat is not considered to be significant. Therefore, this habitat has been scoped out from further consideration.
Recolonising Bare Ground (ED3)	N/A	Low Local Value	Recolonising bare ground is of low ecological value. Therefore, any alteration / loss of this habitat is not considered to be significant. This habitat has been scoped out from further consideration.

Potential Biodiversity Receptor	Relevant Legislation	Valuation	Scoping Result and Justification
Spoil and Bare Ground (ED2)	N/A	Low Local Value	Spoil and bare ground habitats are of limited ecological value. Therefore, any alteration / loss of this habitat is not considered to be significant. This habitat has been scoped out from further consideration.
Hedgerows / Treelines (WL1 / WL2)	Wildlife Act 2000 (as amended)	Low Local Value	All hedgerows / treelines bordering the Site will be maintained and protected as part of the proposed works. Standard tree protection measures will be implemented as part of the proposed works in line with G2 Objective 6, 9, 11, and 13, G6 Objective 1 and HCL15 Objective 3 of the SDCDP [3], refer to Section 5.2.1.2 below. Therefore, this receptor has been scoped in for further consideration.
Drainage ditches (FW4)	N/A	Low Local Value	The Drainage ditches onsite are not considered to be of significant value. However, they do have the potential to support local biodiversity. In addition, these drainage ditches are connected to the Baldonnell Stream and subsequently the wider river network. Therefore, in-line with objectives IE2 Objective 9, G2 Objective 13, G3 Objective 2, G3 Objective 5 and G6 Objective 1 and 3of the SDCDP [3], water mitigation measures and a minimum 8m landscaping buffer will be implemented / maintained to prevent any impacts to the drainage ditch network and in turn, the water quality of the nearby Baldonnell Stream and wider river network. Therefore, this receptor has been scoped in for further consideration.
Surface Water Ponds	N/A	Low Local Value	This habitat is currently of low biodiversity value and appears to be temporary in nature given the absence of aquatic invertebrates. During the construction phase, these temporary surface water ponds will be removed. Given the low ecological value of these ponds, this loss is not considered to be significant. Furthermore, as part of the landscaping works, a wetland area and attenuation pond will be installed to provide opportunities for aquatic and amphibian species. Therefore, this receptor has been scoped out from further consideration.
Flora and Fauna			
Flora	N/A	N/A	No plant species protected under the Flora Protection Order were noted on-site. Overall, the impact of the Proposed Development on both habitats and flora is considered unlikely to be significant. Therefore, this receptor has been scoped out from further consideration.

Potential Biodiversity Receptor	Relevant Legislation	Valuation	Scoping Result and Justification
Bats	Wildlife Act 2000 (as amended) EU Habitats Directive Annex IV	Low Local Value	All trees with bat roost potential were surveyed. No bats were identified emerging from these trees during wither of the surveys. The bat activity onsite consisted of commuting and foraging bats along the hedgerow / treeline which will remain untouched and protected throughout the lifetime of the Proposed Development. There are no buildings onsite and the Proposed Development will not result in the loss of any areas currently utilized for foraging / commuting. However, given the presence of commuting and foraging activity along the Site boundaries and within the wider area, appropriate lighting measures will be implemented in order to ensure no impacts occur to any potential bats or nocturnal fauna utilising the area surrounding the Site, this is in line with IE7 Objective 5 and G4 Objective 4 of the SDCDP [3] (see Section 5.2.2.2). Therefore, taking a precautionary approach, this receptor has been scoped in for further consideration and mitigation measures are outlined below.
Badgers	Wildlife Act 2000 (as amended)	Low Local Value	No signs of badger activity were noted during the field survey and the Site is not considered to be of significant value for badger. However, given the potential, albeit unlikely, for badgers to commute through the Site, standard precautionary measures for terrestrial mammals will be incorporated into the construction works. Therefore, taking a precautionary approach, this receptor has been scoped in for further consideration and mitigation measures are outlined below (Section 5.2.1.3).
Otter	Wildlife Act 2000 (as amended)	Low Local Value	No signs of otter were noted during the field survey within the drainage ditches or the Baldonnell Stream. It is not considered that either of these waterbodies are suitable for or will be utilised by this species. However, given the connectivity of the drainage ditch network to the Baldonnell Stream which in turn discharges into the River Grifeen and eventually the Liffey, there is potential for otter utilising the surrounding river network to be impacted during the construction phase / operational phase without appropriate water mitigation measures. Therefore, mitigation measures will be implemented for the protection of water quality (Section 5.2.1.1 and 5.2.2.1) to ensure that no impacts occur to otter or any other aquatic species during the construction works. Taking a precautionary approach, this receptor has been scoped in for further consideration and mitigation measures are outlined below.
Birds	<u>Nesting Birds</u> Wildlife Act 2000 (as amended)	High Local Value	The hedgerow / treelines bordering the Site provide suitable foraging and nesting habitat for a range of common bird species. However, these areas will not be affected by the proposed development and therefore specific mitigation in relation to bird species is not considered necessary. The proposed landscaping works have the potential to provide additional nesting and foraging habitats for these species. This receptor has been scoped out from further consideration.

Potential Biodiversity Receptor	Relevant Legislation	Valuation	Scoping Result and Justification
Amphibians	Wildlife Act 2000 (as amended) EU Habitats Directive Annex V	Low Local Value	A common frog, and frog spawn were identified within the drainage ditch on separate occasions bordering the Site. Therefore, there is potential for this species to utilise the Site. However, it should be noted that the majority of habitats onsite are not considered suitable for this species and given the abundance of more suitable habitats within the vicinity of the Site, the loss of areas of recolonising ground or surface water ponds is not considered to be significant. However, measures will be implemented for amphibians (Section 5.2.1.3) to ensure that no impacts occur during the construction works. It is however not considered that the development with impact on this species in the long term. There are opportunities to enhance the Site for amphibians by the creation of an attenuation pond. Also, an 8m landscape buffer will be maintained from the development to the drainage ditches to protect them, in line with G3 Objective 2, HCL15 Objective 1 and HCL15 Objective 2 of the SDCDP [14]. In addition, the placement of hibernacula and habitat piles around the margins of the attenuation pond would create refuges for amphibians and provide features to enhance the Site for amphibians. Taking a precautionary approach, this receptor has been scoped in for further consideration.
Other fauna	N/A	N/A	It is considered that the Proposed Development will not give rise to any significant impacts to other fauna, given the localised nature of the proposed development and the overall low ecological value of the Site. In addition, the general best practice measures for the protection of terrestrial and nocturnal fauna will protect any potential hedgehogs in the area alongside common species such as foxes (Section 5.2.1.3).
Invasive Species	N/A	N/A	No invasive species were noted on the Site during the field surveys. However, measures will be implemented in order to ensure no invasive species are introduced to the Site during the construction phase (see Section 5.2.1.3). This is in compliance with G2 Objective 12 and 13 of the SDCDP [3].

5.2 Mitigation Measures

5.2.1 Construction Phase

During the construction phase, all works will comply with all relevant legislation and best practice to reduce any potential environmental impacts. A CEMP will be prepared by the appointed main contractor and will be submitted to the planning authority in advance of works commencing as detailed in Section 3.6.

The following mitigation measures will be incorporated and adhered to in order to ensure that the proposed works do not result in any contravention of wildlife legislation:

- All activities will comply with all relevant legislation and best practice to reduce any potential environmental impacts. The mitigation measures detailed within this EcIA and the NIS will be fully adhered to;
- The Site manager shall ensure that all personnel working onsite will be trained and made aware of the mitigation measures detailed within this EcIA and the NIS;
- An ECoW will be appointed for the construction works and will be available should protected or notable species be encountered during operations at the Site; and,
- In advance of works, all Site personnel will receive a toolbox talk regarding the mitigation measures outlined in the CEMP, EcIA and NIS. Everybody working onsite must understand the role and authority of the ECoW.

An ECoW will inspect the Site in advance of works commencing and will undertake Site inspections as required during the works, to ensure that all works will be completed in line with the CEMP and all wildlife legislation.

5.2.1.1 Protection of Water Quality during Construction

As the Proposed Development is located adjacent to the Baldonnell Stream and given the drainage ditch bordering the Site which discharges into this waterbody, potential runoff of pollutants / sediments during construction could adversely affect the water quality within this stream and downstream in the Grifeen River and the River Liffey.

Potential pollutants resulting from the construction of the proposed development include suspended solids, cementitious materials, silt and hydrocarbon leaks or spills. Sediment / silt have the potential to clog fish gills, degrade spawning habitats and cover / smother aquatic plants. The potential release of these pollutants would result in decreased food availability and therefore, could indirectly affect designated bird species by impacting their food supply. In addition, should hydrocarbons enter the river network, there is potential that the chemical balance of the river network could change which would be toxic for fish and other wildlife.

In order to ensure that the works do not have an impact on surface waterbodies onsite, in the locality or further downstream in the Grifeen and Liffey Rivers, mitigation measures will be put in place in accordance with best practice guidance to avoid impacts on these receptors. This is in line with objectives IE2 Objective 9, G2 Objective 13 and G3 Objective 5 of the SDCDP [3].

Sediment control measures will be put in place to prevent suspended solids in runoff from entering the ditch network bordering the Site and ensure works are in line with the IFI guidelines. These measures will include the following:

- Silt traps will be placed on all outflows from the Site;
- A silt fence will be erected below along the south and east boundaries;
- Existing vegetation will be retained where possible;

- The working area will be clearly defined, and construction activities will be carefully planned to minimise ground disturbance; and,
- Runoff will be diverted away from stripped areas.

Figure 5-1: Proposed Silt Fence Locations during Construction

The following best practice guidelines will be followed, which are based on Inland Fisheries Ireland [20] and National Roads Authority [21] guidance documents:

- Construction stage works will be undertaken in accordance with an approved CEMP;
- Weather conditions will be considered when planning construction activities to minimise risk of runoff from Site;
- All materials shall be stored at the main contractor compound and transported to the works zone immediately prior to construction;
- Any chemical / oils to be stored onsite will be placed within a bund on an area of hardstanding to ensure there is no seepage of pollutants into groundwater or surface water;
- All bunds will have the capacity of the largest tank volume plus 10 percent, at a minimum, with additional capacity to hold 30mm of rainfall;
- Prior to any works commencing, all construction equipment will be checked to ensure that they are mechanically sound, to avoid leaks of oil, fuel, hydraulic fluids and grease;
- Preventative maintenance and relevant maintenance logs will be kept for all onsite plant and equipment;
- Excavations will be left open for minimal periods to avoid acting as a conduit for surface water flows;

- Any pouring of concrete will only be carried out in dry weather. Washout of concrete trucks will not be permitted on the Site;
- Washouts of equipment used for concrete operations will be done either offsite or within a designated washout area, which will comprise a container that will capture the washout material / water for reused or disposal offsite;
- Any spillage of cementitious materials will be cleaned-up immediately;
- Steel tanks will be protected from corrosion;
- All drainage from bund areas must be directed to secure containment prior to suitable disposal;
- Fuel will be delivered onsite by a dedicated tanker or in a delivery bowser dedicated to that purpose;
- The Appointed Contactor will put in place a specific, step-by-step refuelling procedure which will be communicated to all relevant employees onsite;
- All valves should be of steel construction and the open and close positions should be clearly marked;
- Fuels, lubricants and hydraulic fluids for equipment used in the construction Site will be carefully handled to avoid spillage, properly secured against unauthorised access or vandalism, and provided with spill containment according to current best practice;
- Vehicle or equipment maintenance work will be carried out in a designated area on the Site. In the event that refuelling is required outside this area a spill tray will be employed during the refuelling operation;
- No surface water runoff will be discharged onto public roads, foul sewers or adjacent property;
- In order to prevent potential water pollution risk when drainage lines are in place but not fully commissioned, no discharges to the surface water drainage system at the Site will be made until all drains are fully connected to the proposed and approved petrol interceptor; and,
- Measures will be implemented to minimise waste and ensure correct handling, storage and disposal of waste.

The proposed measures to remove the risk from potential contamination and emergency procedures to be implemented in the event of an accidental release or spill of potentially contaminating substances are outlined below.

These procedures will be communicated to all relevant Site staff. At a minimum the following measures will be in place:

- Adequate spill kits including absorbent booms and other absorbent material will be maintained onsite;
- Any spillage of cementitious materials will be cleaned-up immediately;
- All contractor workers will be appropriately trained in the use of spill kits; and,
- Any sediments impacted by contamination will be excavated and stored in appropriate sealed containers for disposal offsite in accordance with all relevant waste management legislation.

5.2.1.2 Protection for Hedgerows, Treelines and Mixed Broadleaved Woodland

During construction, all boundary hedgerows / mature treelines will be retained and protected from unnecessary damage in line with G2 Objective 6, G2 Objective 9, G2 Objective 13, G6 Objective 1, HCL1 Objective 1 and HCL15 Objective 3 of the SDCDP [3]. During construction, care will be required to protect trees from both direct and indirect disturbance. The following protection measures will be adhered to during the works:

- Trees, treelines and hedgerows to be retained that will be located within close proximity to the construction areas will be fenced off by effective construction proof barriers before construction works commence. These barriers will remain in place for the duration of the works to prevent accidental disturbance and define the limits for construction vehicles and other construction staff;
- Care will be required to prevent disturbance to root systems – a buffer zone / construction exclusion zone of unexcavated ground will be maintained along the retained hedgerows and mature tree;
- Where machinery access has to encroach areas within close proximity to the retained hedgerows / treelines, a Root Protection Area (RPA) will be established and suitable ground protection will be put in place to prevent any significant soil compaction or root damage. This should take the form of suitable strength ground protection mats or cellular confinement system capable of supporting the appropriate weight;
- All weather notices will be erected on the fences, and the fencing will be inspected on a regular basis during the construction process;
- Trench digging or other excavation works for services etc. will not be permitted within close proximity to retained trees and hedgerows unless approved and supervised using methods outlined in BS5837: Trees in relation to design, demolition and construction (2012);
- No materials, equipment or machinery will be stored within close proximity to retained hedgerows and trees;
- In order for treeline protection measures to work effectively, all personnel associated with the operation of heavy plant machinery must be familiar with the above principles for the protection of treelines;
- Care will be taken when planning Site operations to ensure that wide or tall loads or plant with booms, jibs and counterweights can operate without coming into contact with retained trees. Such contact can result in serious damage to them and might make their safe retention impossible;
- Notice boards, wires, etc. will not be attached to any trees. Site offices, materials and contractor parking will all be outside the Construction Exclusion Zone; and,
- The retained trees will be assessed following the completion of the construction works.

As part of the proposed development, there will be additional landscape planting along the southern and eastern boundaries in line with G2 Objective 5, G2 Objective 6, G2 Objective 9, G4 Objective 5, G6 Objective 1 and G6 Objective 3 of the SDCDP [3] (see Appendix C – Landscape Plan). The plantings will comprise a mix of native woodland / hedgerow planting, including birch (*Betula pendula*), oak (*Quercus rober*), field maple (*Acer campestre*) and bird cherry (*Prunus padus*), which will provide cover and potential foraging opportunities for wildlife.

5.2.1.3 Protection of Species

Amphibians

Vegetation clearance and ground stripping adjacent to the drainage ditch will be supervised by the ECoW to ensure no adverse effects occur to any amphibians in the area. Should amphibians be encountered during the construction works, the ECoW will be consulted for advice.

Hibernacula and habitat piles will be installed in the landscaped area around the drainage ditch network and along the attenuation pond to support any potential amphibians in the area (See Section 5.3 below).

Badgers / Terrestrial Mammals

Terrestrial mammals are known to occur within the wider area and may inadvertently enter the Site. Therefore, to ensure that the works in relation to the Proposed Development do not have significant impacts on mammals, general construction procedures and mitigation measures, which are in line with the NRA (now TT) guidance for Badgers and Objective HCL15 Objective 1 of the SDCDP [3] will be undertaken.

- Where deep excavations will be required onsite, appropriate measures to protect mammals from ingress will be installed;
- Should construction works be required outside of daylight hours, the appointed project ECoW will be consulted as required; and,
- If unidentified burrows are identified within the works area during construction, works will cease within that area and the project ECoW will be contacted for advice.

Invasive species

To mitigate against the unintentional introduction of invasive species during construction and decommissioning works, the following mitigation measures will be followed in line with Objectives G2 12 and 13 of the SDCDP [3]:

- All vehicles, machinery and any other equipment used for the works will be washed prior to its use at the Site to prevent the import of plant material or seeds;
- Before machinery or equipment is unloaded at the Site, equipment will be visually inspected to ensure that all adherent material and debris has been removed;
- Any vehicles and machinery that are not clean will not be permitted entry to the Site;
- All materials to be imported to the Site including additional planting will be sourced from a reputable supplier and records of all material and supplies will be maintained;
- In advance of works, all Site personnel will receive a toolbox talk with regards to invasive species; and,
- Everybody working onsite must understand the role and authority of the ECoW managing the issue of the non-native species.

Other flora and fauna

No significant impacts on other flora and fauna are expected, therefore, no mitigation additional to the ones specified above are required.

5.2.1.4 Noise and Vibration Mitigation Measures

Construction noise and vibration can result in disturbance behavioural impacts, stress and displacement from feeding grounds for various species. A Noise Assessment conducted by Awn Consulting concluded that significant vibration impacts on sensitive locations are not

expected and that construction noise will not be significant for the majority of the proposed works. Notably, however, slight construction noise impacts were predicted and therefore, the following precautionary construction noise and vibration mitigation measures will be implemented for the Proposed Development. This will ensure that there will be no adverse effects on any potential nocturnal species utilising the Site and wider landscape. These measures are in line with the recommendations of BS 5228: Part 1 [22] and include the following:

- Only plant with the lowest noise ratings will be selected;
- The location of noisy / vibratory plant will be based on the least impact in terms of noise;
- All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the contract;
- Compressors will be attenuated models, fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers;
- Machinery that is used intermittently will be shut down or throttled back to a minimum during periods when not in use;
- Appropriate vibration isolation shall be applied to plant, where feasible;
- Cut off trenches to isolate the vibration transmission path shall be installed where required;
- All construction related works, aside from emergencies will be carried out during normal working hours, as outlined in Section 3.6; and,
- Any plant, such as generators or pumps, which is required to operate before 07:00hrs or after 19:00hrs will be surrounded by an acoustic enclosure or portable screen.

It should be noted that the Site is located within a predominantly urban environment with associated road infrastructure. Given the location of the Site, there are elevated levels of human and noise related disturbance within the area, therefore, any species utilising the area will be habituated to elevated levels of activity or will avoid this area. In addition, the construction works are temporary in nature and species can and will move away from any temporary disturbance to alternative habitats within the wider surrounding area. It can therefore be concluded that provided the above mitigation measures are followed during construction, the proposed development will not cause significant adverse effects to local wildlife during the construction phase.

5.2.2 Operational Phase

5.2.2.1 Protection of Water Quality during the Operational Phase

The additional built structures onsite will result in an increase in storm water runoff. However, as the proposed drainage system will utilise an approved petrol interceptor, attenuation pond and hydrobrake, as described in Section 3.4.1.1, it is not considered that the proposed development will have any adverse effects on water quality within the Baldonnell stream, Grifeen river or further downstream in the South Dublin Bay and River Tolka Estuary SPA.

Furthermore, during the operational phase of the proposed development, foul drainage will connect into the existing Profile Park infrastructure as described in Section 3.4.1.2. No alterations to this approved system are proposed.

As outlined in Section 3.4, eight (8No.) fuel tanks will be installed and utilised onsite if the gas power supply from the Proposed Development is compromised. These tanks will be double

skinned and have a minimum of 10% additional capacity. In addition, these tanks will be stored on an area of hardstanding and will be protected by a wall to the north. A dedicated refuelling point for these tanks will be located within an area of hardstanding and all relevant personnel will be trained in the prevention and control of spillages. This training will include the correct use of spill kits. Spill kits will be located at various locations around the facility.

5.3 Ecological Enhancement Measures

5.3.1 Treelines / Hedgerows

The hedgerow / treeline bordering the Site will be maintained and protected during the construction and operational phase of the proposed development and enhancement plantings will strengthen these existing linear habitats.

All hedgerow planting will provide shelter and a source of food for a variety of species throughout the year including birds, small mammals, amphibians and butterflies. It will also allow movement of species such as badger and other small mammals across the Site and provide connectivity to the wider landscape.

To maximise the value of these features, plantings will include a mix of native species, of local providence and / or those that have a known attraction or benefit to local fauna as listed in Table 5-2. It should be noted that ornamental trees will also be planted as part of the proposed development within the carpark and along the western border, however, along the eastern and southern boundaries of the Site, only native species will be introduced. The planting along the eastern boundary will provide additional screening between the Site and the Grange Castle golf course and supplement the existing ash trees onsite.

Table 5-2: Hedgerow / Tree Planting Mix Onsite

Planting Type	Common Name	*Scientific Name*
Woodland / Hedgerow Planting (75No.)	Birch	*Betula pendula*
	Oak	*Quercus rober*
	Bird Cherry	*Prunus padus*
	Field Maple	*Acer campestre*
Boundary Wetland Trees (12No.)	Black Alder	*Alnus glutinosa*
	Goat Willow	*Salix caprea*
Thorny Hedge Mix (335 ln/m)	Blackthorn	*Prunus spinosa*
	Holly	*Ilex aquifolium*
	Hawthorn	*Crataegus monogyna*
Hedge (305 ln/m)	Beech	*Fagus sylvatica*
Street Trees (11No.)	Turkish Hazel	*Corylus columa*
	Field Maple	*Acer campestre*
	Small Leaved Lime	*Tilia cordata greenspire*
Ornamental trees (13No.)	Cherry Blossom	*Prunus spp.*

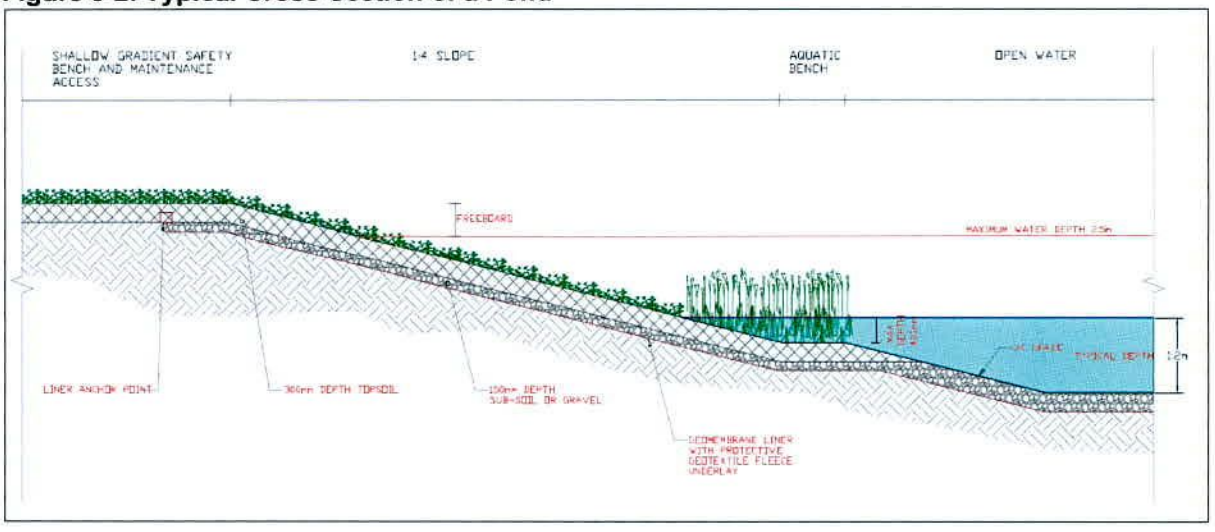
Planting Type	Common Name	*Scientific Name*
	Japanese Maple	*Acer Palmatum*
	Evergreen Magnolia	*Magnolia grandiflora*
	Crab Apple	*Malus spp.*

5.3.2 Attenuation Pond and Wetland Habitat

A surface water attenuation pond will be created as part of the Proposed Development. The areas surrounding this feature will have gradual sloping shoreline banks with shallow areas to foster a variety of wildlife, refer to Figure 5-2. The availability of relatively warm, still water with emergent wetland vegetation is essential to allow amphibian / aquatic wildlife to breed and reproduce. Suitable ponds, for example, will hold flourishing populations of damselflies and dragonflies, which provide food source for frogs, birds and bats. The attenuation pond will be designed to ensure that it remains wet year-round.

Planting of marsh vegetation around the pond will jump start the plant establishment process which will lead to earlier colonisation of wetland species such as aquatic invertebrates, amphibians and birds. The landscape plan, attached as Appendix C, has included for the planting of curled and lesser pondweed (*Potamogeton spp.*), brandy bottle (*nuphar lutea*) and white water lilly (*Nymphaea alba*) within the attenuation pond for this purpose. In addition, suitable marginal and emergent plants will be planted around the banks of the attenuation pond including marsh marigold (*Caltha palustris*), yellow flag iris (*Iris pseudacorus*), flowering rush (*Butomus umbellatus*), bog bean (*Mentanthes trifoliata*), marsh cinquefoil (*Potentilla palustris*), water mint (*Mentha aquatica*) and arrowhead (*Sagittaria sagotifolia*).

Figure 5-2: Typical Cross Section of a Pond



It should be noted that as part of the Landscape Plan, the swales will be planted with a wetland flora mix that is suitable for seasonally flooded groundcover. Table 5-3 includes a breakdown of the species mix proposed and includes some increasingly threatened / endangered species.

Table 5-3: Proposed EC05 Wetland Wild Flora Mix

Common Name	*Scientific Name*
Devils Bit Scabious	*Succisa pratensis*

Common Name	Scientific Name
Common Sorrel	*Rumex acetosa*
Corn Marigold	*Glebionis segetum*
Corn Poppy	*Papaver rhoeas*
Corn Cockle	*Agrostemma githago*
Corn Flower	*Centaurea cyanus*
Cowslip	*Primula Veris*
Fleabane	*Erigeron spp.*
Greater Trefoil	*Lotus corniculatus*
Hemp Agrimony	*Eupatorium cannabinum*
Lesser Knapweed	*Centaurea nigra*
Marsh Marigold	*Caltha palustris*
Meadow Buttercup	*Ranunculus Acris*
Meadowsweet	*Filipendula ulmaria*
Meadow Rue	*Thalictrum spp.*
Oxeye Daisy	*Leucanthemum Vulgare*
Purple Loosestrife	*Lythrum salicaria*
Ragged Robin	*Lychnis Flos Cuculi*
Red Clover	*Trifolium pratense*
Red Rattle	*Pedicularis sylvatica*
Ribwort Plantain	*Planatago Lanceolata*
Redshank	*Persicaria maculosa*
Scented Mayweed	*Matricaria recutita*
Self-Heal	*Prunella Vulgaris*
Sneezewort	*Achillea ptarmica*
Tufted Vetch	*Vicia cracca*
Water Avens	*Geum rivale*
Wild Angelica	*Angelica sylvestris*

Common Name	Scientific Name
Wild Valerian	*Valeriana officinalis*
Yarrow	*Achillea millefolium*
Yellow Flag Iris	*Iris pseudacorus*
Yellow Rattle	*Rhinanathus Minor*

5.3.3 Wildflower Meadows

Wildflower meadows are not only visually attractive but can also significantly enhance the local biodiversity and support a rich community of wildlife. Planting a range of flowering plants, including night-scented plants, can provide a source of nectar for a range of species such as butterflies and bumblebees and will attract insects for bats to feed on.

As part of the proposed landscape plan ca. 3946m^2 of bee friendly wildflower mixed will be introduced onsite. All wildflower planting will consist of a mixture of native species, see Table 5-4 and Figure 5-3 for examples of wildflower habitats and a potential native planting mix.

Figure 5-3: Wildflower Meadow Habitats

Table 5-4: Example of a 100% Native Wildflower Meadow Seed Mixture General Purpose

Common Name	Scientific Name	Percentage Mix (%)
Birdsfoot Trefoil	*Lotus Corniculatus*	2.5%
Common Cat's Ear	*Hypochaeris Radicata*	1.0%
Corn Poppy	*papaver Rhoeas*	2.5%
Cowslip	*Primula Veris*	0.2%
Field Scabious	*Knautia Arvensis*	2.5%
Lady's Bedstraw	*Galium Verum*	7.5%
Lesser Knapweed	*Centaurea Nigra*	7.5%
Meadow Buttercup	*Ranunculus Acris*	7.5%
Meadow Vetchling	*Lathyrus pratensis*	1.0%

Common Name	Scientific Name	Percentage Mix (%)
Musk Mallow	*Malva Moschata*	7.5%,
Ox Eye Daisy	*Leucanthemum Vulgare*	2.0%,
Ragged Robin	*Lychnis Flos Cuculi*	0.2%,
Red Campion	*Silene Dioica*	7.5%,
Ribwort Plantain	*Planatago Lanceolata*	7.5%
Rough Hawkbit	*Leontodon hispidus*	0.5%,
Salad Burnet	*Sanguisorba Minor*	7.5%,
Self-Heal	*Prunella Vulgaris*	7.5%,
Small Scabious	*Scabiosa columbaria*	0.5%,
Common Sorrel	*Rumex Acetosa*	2.5%,
White Campion	*Silene Alba*	7.0%,
Wild Carrot	*Daucus carota*	5.0%,
Upright Hedge Parsley	*Torilis Japonica*	2.5%
Yarrow	*Achillea millefolium*	2.5%
Yellow Rattle	*Rhinanathus Minor*	5.0%
Wild Clary	*Salvia Verbenaca*	2 .5%

5.3.4 Hibernacula and Habitat Piles

Artificial hibernacula or habitat piles will be installed around the attenuation pond to provide shelter and hibernation sites for amphibians. These habitats act as refuges and hibernation sites for amphibians as well as a host of other species of inverts and small mammals, refer to Figure 5-4 and 5-5.

Hibernacula are constructed through the placement of either piles of rocks or logs around the margins of wetland areas / onsite waterbodies and adjacent to drainage ditches. They should be placed in a position with adequate sunlight and can be tailored to accommodate amphibians and invertebrates by placing them nearer to the water's edge.

Figure 5-4: Typical hibernaculum and cross section

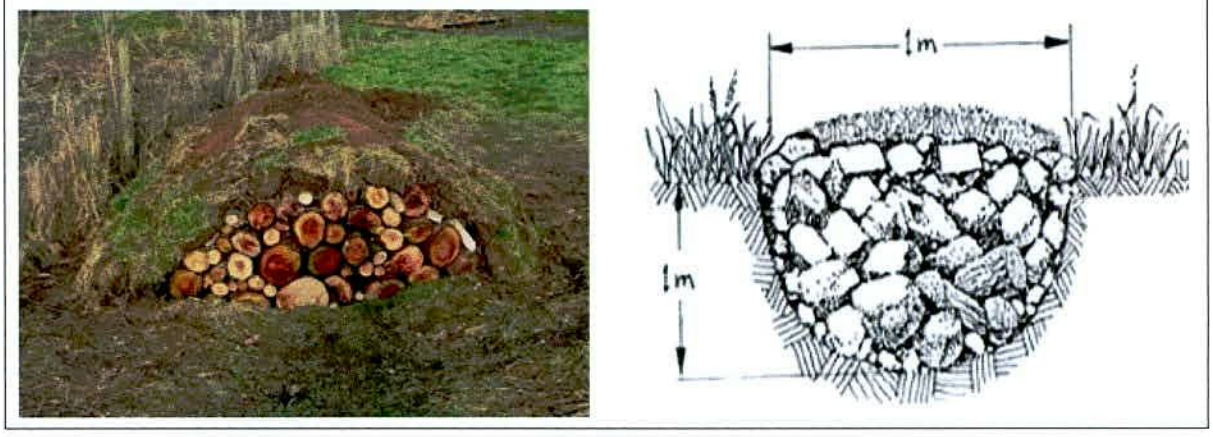


Figure 5-5: Habitat Piles

5.3.5 Green Roofs and Trellises

The addition of green roofs and trellises onsite will promote surface water attenuation and these features have also been linked to noise insulation, temperature moderation, and the filtration of air-borne pollutants; these properties will further reduce the impact of the proposed operational phase on any wildlife utilising the surrounding area. Green trellises and roofs designed with biodiversity in mind can provide foraging opportunities, shelter and even resting / nesting habitats for wildlife.

Introducing green roofs onsite will help compensate for the vegetation clearance required for the proposed development whilst providing food for herbivorous insects such as caterpillars. In addition, incorporating floral species into the design, particularly flowers with a long blooming season, will benefit pollinators in the area, refer to Table 5-4 for further details on the proposed native species mix for the green roofs onsite. Enhancing the Site for insects will in turn increase prey populations for any future bats or amphibians utilising the Site or its adjoining lands.

Table 5-5: Native Green Roof Seed Mix

Common Name	*Scientific Name*
Common bent grass	*Agrostis capillaris*
Burnet saxifrage	*Pimpinella saxifrage*
Centaury	*Centaurium erythraea*
Wild chamomile	*Chamaemelum nobile*

Common Name	Scientific Name
Corn pansy	*Viola spp.*
Cowslip	*Primula veris*
Eyebright	*Euphrasia spp.*
Lady's bedstraw	*Galium verum*
Ox-eye daisy	*Leucanthemum vulgare*
Red bartsia	*Odontites serotina*
Yellow rattle	*Rhinanthus minor*
Selfheal	*Prunella vulgaris*
Sheep's bit scabious	*Jasione montana*
White stonecrop	*Sedum album*
Blackstonia	*Blackstonia perfoliata*
Fairy foxglove	*Erinus alpinus*
Sea campion	*Silene uniflora*
Ivy leaved toadflax	*Cymbalaria muralis*
Quaking grass	*Briza media*
Wall pennywort	*Umbilicus rupestris*
Storksbill	*Erodium cicutarium*
Thyme (wild)	*Thymus polytrichus*
Sweet violet	*Viola odorata*
Dog violet	*Viola riviniana*
Keeled garlic	Allium carinatum
Harebell	*Campanula rotundifolia*
Cat's ear	*Hypochaeris radicata*
Corn spurry	*Spergula arvensis*
Fairy flax	*Linum catharticum*
Lesser yellow clover	*Trifolium dubium*

A wire trellis system will be introduced around the OSPG compound, refer to DB080-MA-LS-XX-DR-L-PLNT-7053 for further details. These beds will be planted with Chinese wisteria (*Wisteria sinensis*) and Persian ivy (*Hedera colchica*), non-native ornamental species.

Chinese wisteria and Persian ivy are both flowering plants that provide a source of nectar / pollen for pollinators.

6 CONCLUSIONS

Based on the findings of a detailed desk-based study, a review of all the ecological information available for the Site and wider area and a field survey by MOR Ecologists, it is considered reasonable to conclude the following:

- The Site itself is currently of low local ecological value;
- The Site is located in an area predominantly made up of compacted bare ground and recolonising bare ground and is zoned under objective EE which aims to, '*provide for enterprise and employment related uses.*' It is not of value to any Annex I or Annex II species or Red listed birds;
- The bat surveys did not identify any bats roosting onsite;
- The amphibian surveys did not identify any amphibians utilising the surface waterbodies on the Site. However, amphibians were noted within the drainage ditch along the southern border of the Site;
- The Proposed Development will not result in any significant impacts on ecological receptors identified both onsite and in the surrounding area following the implementation of appropriate mitigation measures; and,
- The proposed landscape planting and biodiversity enhancement measures will supplement the existing vegetation onsite and provide additional habitats and opportunities for species already existing within the area.

7 REFERENCES

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APPENDICES

APPENDIX A

APPENDIX B

June 2021

DB080-MOR-LS-XX-RP-V-XXXX-8060

Bat Survey Report

Proposed Development (Equinix DB8)

RKD

On behalf of

RKD Architects Ltd.

Profile Park, Co. Dublin

MALONE O'REGAN ENVIRONMENTAL

QUALITY
I.S. EN ISO 9001:2015
NSAI Certified

MALONE O'REGAN

Form ES - 04

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Title: Bat Survey Report, Proposed Development (Equinix DB8), RKD Architects Ltd., Profile Park, Co. Dublin

Job Number: E1739

Prepared By: Allison Flaherty **Signed:** Allison Flaherty

Checked By: Dyfrig Hubble **Signed:**

Approved By: Dyfrig Hubble **Signed:**

Revision Record

Issue No.	Date	Description	Remark	Prepared	Checked	Approved
01	24/06/21	Bat Survey Report	Final	AF	DH	DH

Bat Survey Report
Proposed Development (Equinix DB8)
RKD Architects Ltd.
Profile Park, Co. Dublin

Contents

FIGURES

TABLES

1 INTRODUCTION

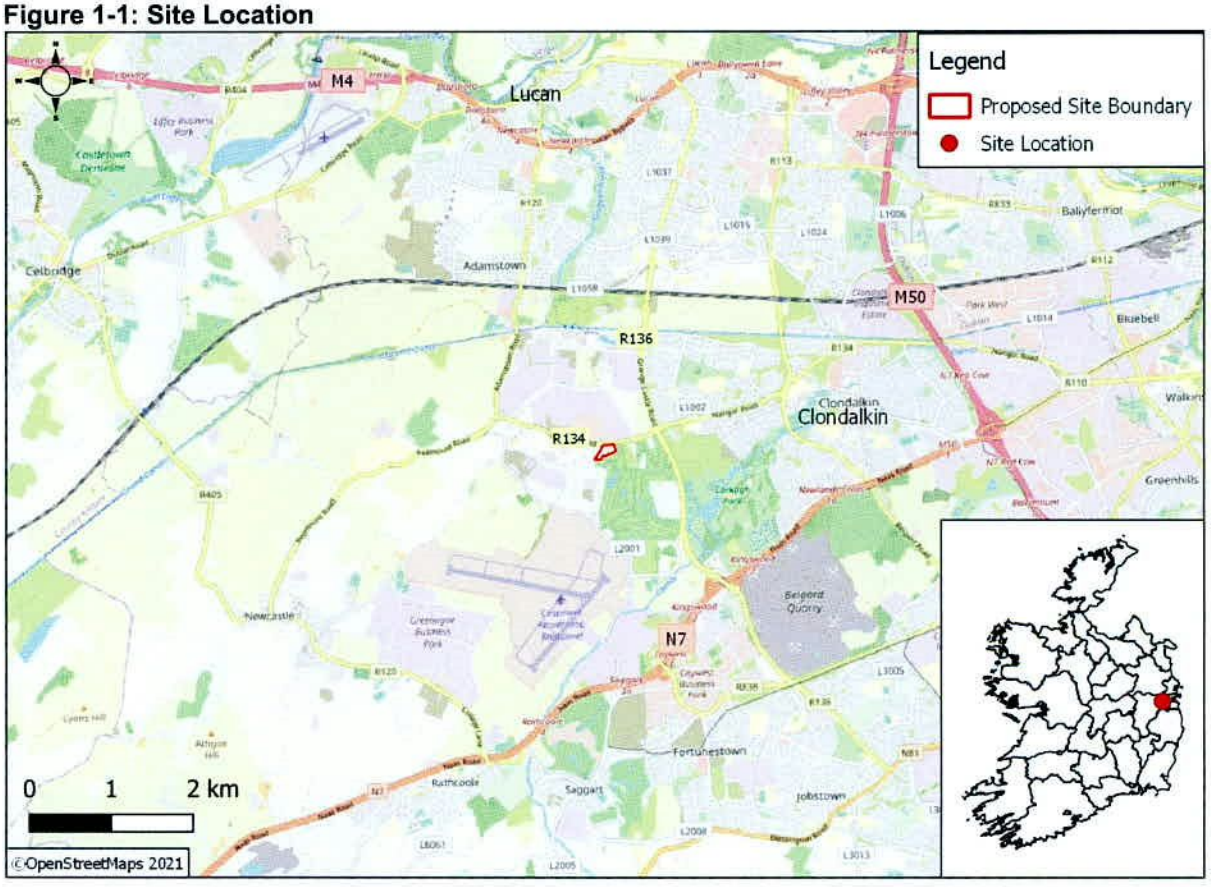
1.1 Background

Malone O'Regan Environmental (MOR) were commissioned by RKD Architects Ltd on behalf of Equinix (Ireland) Ltd to undertake a Bat Survey Report for the construction and operation of a proposed data centre and all ancillary works (the 'Proposed Development'), at Profile Park, Kilcarbery, Dublin, Co. Dublin (OS Reference O 04052 30807).

The baseline ecological survey of the Site highlighted the potential for bats to commute and forage along the boundaries of the Site and the potential for bats to roost within some of the mature trees on Site. It was therefore deemed necessary for further survey work to be carried out in order to determine the level of bat activity at the Site and whether or not any bat roosts occur within the mature trees along the boundaries of the Site.

The location of the proposed development ('the Site') is shown in Figure 1-1.

Figure 1-1: Site Location



1.2 Relevant Legislation

All Irish bat species are protected by law under the Wildlife Act 1976 and its subsequent amendments. They are afforded full protection under this act, which makes it a criminal offence for anyone without a licence to:

- Kill, injure or handle a bat;
- Possess a bat (whether alive or dead);
- Disturb a roosting bat; and,

- Damage, destroy or obstruct access to any place used by bats for shelter, whether they are present or not.

In addition to domestic legislation, bats are also protected under the EU Habitats Directive (92/43/EEC). All Irish bats are listed in Annex IV of the Habitats Directive and the lesser horseshoe bat is further listed under Annex II, which make it an offence to:

- Deliberately capture, injure or kill any bat; or,
- Deliberately disturb a bat, in particular any disturbance which is likely;
    (a) To impair their ability:
        (i) To survive, to breed or reproduce, or to rear or nurture their young; or,
        (ii) To hibernate or migrate.
    (b) To affect significantly the local distribution or abundance of the bat species; or,
- Damage or destroy a breeding site or resting place of a bat.

Therefore, the destruction, alteration or evacuation of a known bat roost is a notifiable action under current legislation and a derogation license must be obtained from the National Parks and Wildlife Service (NPWS) before works can commence.

Furthermore, it should also be noted that any works interfering with bats and especially their roosts, including for instance, the installation of lighting in the vicinity of the latter, may only be carried out under a license to derogate from Regulation 23 of the Habitats Regulations 1997, (which transposed the EU Habitats Directive into Irish law) issued by NPWS.

1.3 Statement of Authority

The bat surveys and subsequent survey report were undertaken and prepared by the following MOR personnel, Mr. Dyfrig Hubble and Ms. Allison Flaherty.

Dyfrig Hubble, Principal Ecologist, has a B.Sc. (Hons) in Tropical Environmental Science and an M.Sc. Environmental Forestry. Dyfrig is a full member of the Chartered Institute of Ecology and Environmental Management. Dyfrig has over 15 years' experience working in the ecological consultancy sector including habitat appraisals and specialist species specific surveys. Dyfrig has extensive experience in undertaking surveys for bats and in the preparation of survey reports for various projects within both the UK and Ireland.

Allison Flaherty, Environmental Consultant, has a B.A. Biology, a M.Sc. Biodiversity and Conservation and over 2.5 years' working experience in the ecological consultancy sector. Allison is a qualifying member of the Chartered Institute of Ecology and Environmental Management (CIEEM) and has a specialist interest in bats. Allison has gained extensive experience in undertaking bat surveys and assessments within her role at MOR. Allison has also taken part in specialist bat trainings including; *Introduction to Bat Ecology and Bat Surveys; Bats: Impact Assessment of Development, Mitigation and Enhancements; Bats for Building Professionals; Patterns of Bat Activity at Upland Windfarms: Implications for Sampling and Mitigation;* and *Designing Biodiversity Net Gain for Bats*, all provided by CIEEM course instructors.

1.4 Purpose of Survey Work

The implication of these legislative policies is that the proposed development needs to take account of the potential effects on bats. Survey work is necessary to establish whether the species are currently present in areas where suitable habitat exists and in areas where bats have previously been recorded. Survey work also enables appropriate mitigation measures to

be incorporated into the design of the project and ensures that there are no adverse effects on the conservation status of the species.

Survey work was deemed necessary based on desktop surveys and suitable habitat being identified during the initial walkover of the Site.

2 METHODOLOGY

The methodologies used to establish the presence / potential presence of bats are summarised below.

2.1 Desk-Based Studies

A desk-based study was undertaken to identify records of bats within the Site. The following sources of information were reviewed:

- The National Parks and Wildlife Service (NPWS) website was consulted to obtain the most up to date detail on conservation objectives for the Natura 2000 sites relevant to this assessment (National Parks and Wildlife Service, 2021); and,
- The National Biodiversity Data Centre (NBDC) website was consulted with regard to bat species distributions and bat habitat suitability index (National Biodiveristy Data Centre, 2021).

2.2 Field Based Studies

All surveys conducted followed methodology outlined in the Bat Mitigation Guidelines for Ireland (DoEHLG, 2006), Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes (National Roads Authority, 2006) and Bat Surveys for Professional Ecologists Good Practice Guidelines (Collins, 2016).

2.2.1 Dusk Emergence Survey / Transect Surveys

Two dusk emergence surveys were undertaken on May 24th and June 8th 2021 by two (2no.) qualified MOR Ecologists. The surveys commenced 15 minutes before sunset and ended 2 hours after sunset, therefore encompassing the typical emergence times of Irish bat species.

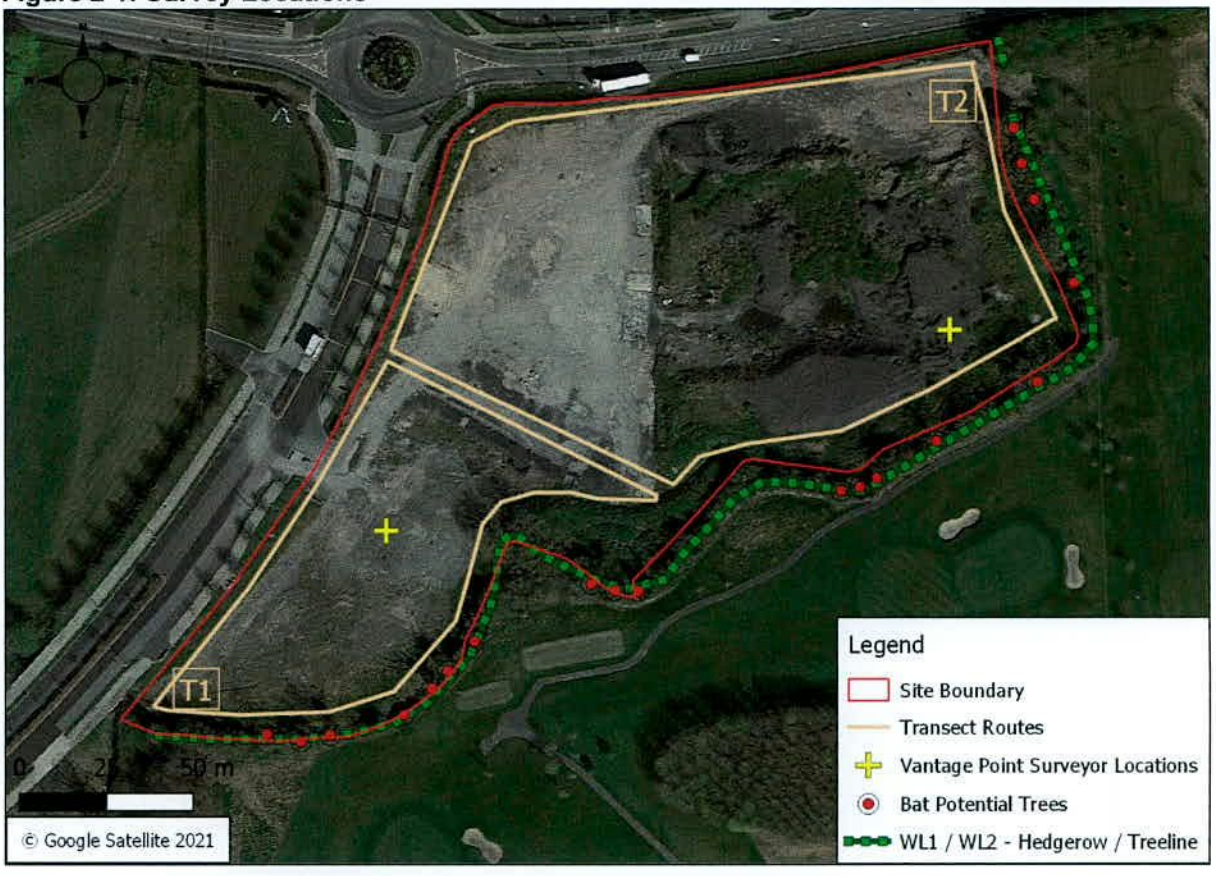
The surveys were designed to cover all vegetated areas within the Site and to determine if any bats were emerging from the stands of mature trees along the southern and eastern boundary of the Site and to identify the levels of commuting and foraging within the Site and immediate vicinity.

MOR Ecologists surveyed the stands of mature Ash trees along southern and eastern boundaries of the Site for 15 minutes before sunset and 1 hour after sunset for each survey. The stands of mature ash trees were surveyed at pre-determined vantage points so that they could be monitored for bat emergence (See Figure 2-2).

For the last hour of the survey, the two surveyors walked the Site in pre-determined transect routes (T1 and T2 in Figure 2-1), noting the time, behaviour (foraging or commuting), location and bat species encountered. The GPS mapping function was used on the Echo Meter Touch2 Pro (Apple IOS) connected to Apple iPhone-7, this is mapped using Google Earth with a KLM file produced for mapping purposes.

A combination of visual observation and listening to ultrasonic bat calls using frequency division bat detector (Batbox Duet) and Echo Meter Touch2 Pro (Apple IOS) were used throughout the emergence surveys. Bat calls were recorded digitally using Edirol Roland R-05 recorder and Echo Meter Tough2 Pro and analysed using appropriate software (KaleidoscopePro) to aid the identification of bat species present.

Figure 2-1: Survey Locations



2.3 Survey Limitations

All survey work was conducted in accordance with current best practice guidelines. All of the surveys were undertaken when there was no rain or wind, and the temperature was above 10°C. In these weather conditions, bats will not have been deterred from flying and no survey limitations were encountered.

3 RESULTS

3.1 Desk-Based Results

Prior to conducting the field surveys, a desk-based review of information sources was completed.

Table 1 provides details of the habitat suitability index for the study area (National Biodiveristy Data Centre, 2021). The habitat suitability index identifies the geographical areas that are suitable for individual species. The index ranges from 0 to 100, with 100 being the most favourable to bats. The index presented is for all species combined, in addition to the individual species indices within the study area.

From the indices, it can be established that the study area has an overall moderate habitat suitability index range of 21– 28. The Irish bat species with moderate or moderate-high habitat suitability index for the area include common pipistrelle, brown long-eared bat, soprano pipistrelle and lesser noctule.

However, ca.150m south of the Site is an area of high suitability for bats, ranging from 36.4-58.5 (NBDC, 2021).

Table 1: Habitat Suitability Index

Bat Species	Suitability Index Range	Suitability Index Level
All Bat Species	21– 28	Moderate
Soprano Pipistrelle *(Pipistrellus pygmaeus)*	31 - 38	Moderate
Brown Long-eared Bat (*Plecotus auritus)*	39 - 49	Moderate - High
Common Pipistrelle (*Pipistrellus pipistrellus)*	39 - 47	Moderate - High
Lesser Horseshoe Bat (*Rhinolophus hipposideros)*	0 - 4	Very Low
Whiskered Bat *(Myotis mystacinus)*	10 - 20	Low
Daubenton's Bat *(Myotis daubentonii)*	13 - 21	Low
Lesser Noctule *(Nyctalus leisleri)*	38 - 46	Moderate - High
Nathusius' Pipistrelle *(Pipistrellus nathusii)*	16 - 29	Low - Moderate
Natterer's Bat *(Myotis nattereri)*	14 - 26	Low - Moderate

Table 2 provides a summary of records of bat species that occur within a 2km grid square of the Site boundary (NBDC, 2021).

Table 2: NBDC Bat Species within 2km of the Site

Bat Species			
Daubenton's Bat	*Myotis daubentonii*	19/08/2013	Wildlife Acts 1976 / 2000 EU Habitats Directive Annex IV
Pipistrelle	*Pipistrellus pipistrellus sensu lato*	17/07/2011	Wildlife Acts 1976 / 2000 EU Habitats Directive Annex IV
Soprano Pipistrelle	*Pipistrellus pygmaeus*	19/08/2013	Wildlife Acts 1976 / 2000 EU Habitats Directive Annex IV

3.2 Field Based Results

3.2.1 Dusk Emergence Survey / Transect Results

No bats were observed emerging from or re-entering any of the trees surveyed during the vantage point portion of the surveys. The surveys did identify bats commuting along treeline / scrub area to the south and east of the Site that border the Grange Castle golf course to the south (See Figure 3-3). Low levels of bat activity were recorded within the Site during both surveys.

The following bats were recorded as a result of the dusk emergence surveys:

- Common pipistrelle, soprano pipistrelle and lesser noctule bats were recorded commuting along the treelines to south and east of the Site which border the adjacent Grange Castle golf course. The most frequently encountered species of these were common pipistrelle and lesser noctules. These species are relatively wide-spread and the most commonly encountered species within Ireland;
- No bats were identified to be roosting within the mature ash trees along the southern and eastern boundaries of the Site; and,
- As very few bats were recorded soon after dusk during the emergence surveys, this indicates that bat roosts are not likely to be present within the immediate local area.

Based on the levels of activity and movement of the bats recorded during the surveys, it is considered that the Site is of little value to bats. During the surveys it was noted that the Site is partially illuminated by street lighting posts from the adjacent R134 regional road to the north and private road to the west, as well as flood lights from buildings and the car park building directly north across the R134. As bats are typically adverse to lighting, very little commuting and foraging activity was noted within the illuminated areas.

Figure 3-1: Bat Activity Map within the Site

4 IMPACT ASSESSMENT AND MITIGATION

The following bat species have been recorded during the bat surveys: common pipistrelle, soprano pipistrelle and lesser noctule. This represents three of the nine residence bat species known to Ireland, all of which are common Irish bat species. All bat species recorded during the bat surveys are Annex IV species under the EU Habitats Directive and all have a favourable status in Ireland.

Bat species within the Site will be affected by both the construction phase and operational phase of the proposed development. The impact assessment and mitigation will be undertaken in relation to the three bat species recorded within the Site and the surrounding area: common pipistrelle, soprano pipistrelle and lesser noctules.

4.1 Potential Impacts on Bats

Principal impacts of the proposed development, in general, on bat fauna may be summarised as follows:

4.1.1 Loss of Habitat

None of the mature treelines along the southern and eastern boundaries of the Site will be removed due to the proposed development. These treelines will be retained and protected throughout the lifetime of the proposed development.

The surveys did not identify any bat roosts within the Site. However, there is potential commuting and foraging habitats to the south and east of the Site and within the wider area. Therefore, it is considered that without the appropriate consideration of foraging and commuting bats in close vicinity to the Site, that the proposed development could have a Negative Impact on bat species.

4.1.2 Lighting of the General Area (street lighting, security lighting etc.)

Lighting for the proposed development will potentially impact on bat species in relation to commuting and foraging potential within the wider area which is used by lesser noctules and pipistrelles. Common pipistrelles and soprano pipistrelles will tolerate low levels of lighting, however excess lighting is likely to have an impact on bats.

In the absence of an appropriate lighting scheme, it is considered that the proposed development could have a Negative Impact on foraging and commuting bats.

4.2 Mitigation Measures

The following mitigation measures are recommended to reduce the potential impact of the proposed development on local bat populations:

4.2.1 Landscape Plan

The proposed Landscape Plan has been developed to replace *at the least*, any vegetation removed due to the proposed development and details the planting of a significant number of new native broadleaf trees within the Site. The landscape plan also includes an 8m biodiversity 'protection area' along the southern and eastern boundaries of the Site.

The following landscape recommendations are also advised:

- Avoid the use of chemicals (weed killers, etc.) within the development zone; and,
- The plantings should comprise a mix of native woody shrubs and trees, including fruit-bearing species, which will provide cover and potential foraging opportunities for wildlife including bats.

4.2.2 Lighting Plan

Bats are adverse to excessive lighting, subsequently, impacts could occur as a result of an inappropriate lighting strategy. Therefore, it is important that lighting installed for the proposed development will be completed with sensitivity for local wildlife while still providing the necessary lighting for human usage.

The lighting strategy has been designed to mitigate against any potential impacts on nocturnal species in line with the Bat Conservation Trust (BCT) Guidelines on '*Bats and Artificial Lighting in the UK*' (BCT, 2018). The lighting strategy involves avoiding excessive lighting. The following measures have been taken into consideration during the lighting layout design:

- Construction should be limited to daylight hours in order to minimise adverse effects on nocturnal fauna;
- Avoidance of excessive lighting;
- Light Emitting Diodes (LED's) will be used and the brightness will be set as low as possible;
- Lighting will be aimed only where it is needed, with no upward lighting;
- Lighting will be directed away from landscaped areas and retained sections of hedgerows and trees; and,
- Lighting will be turned down / off when not required.

4.2.3 Monitoring

In order to ensure that the works in relation to the proposed development do not have significant impacts on bats, the following construction procedures and mitigation measures should be implemented. These measures are in line with the BCT Guidelines '*Bats and Artificial Lighting in the UK*' (BCT, 2018):

- Following the installation of the lighting for the proposed development, a suitably qualified Ecologist should undertake a further site inspection in order to check the lighting patterns and lux levels along the site boundaries to ensure there are no impacts to bats or other nocturnal species.

4.2.4 Recommendations

The tree survey report carried out for the proposed development suggested the monitoring and cut back of some mature ash trees along the south-eastern boundary which were diseased with ash die back.

It is therefore recommended that any mature trees that are to be removed from this area should be subject to tree inspections by a suitably qualified ecologist, and if deemed necessary, presence absence surveys may be required if the tree possesses potential roost features for bats. It should however be noted that this will not form part of this development.

5 CONCLUSIONS

The bat surveys undertaken for the proposed development included a walkover of the lands within the Site.

The survey works included two (2no.) dusk emergence / transect surveys. The walkover identified a stand of mature ash trees along the southern and eastern boundaries that could be suitable for roosting bats. These trees will not be removed as part of the proposed development. These trees were subject to dusk emergence surveys; however, no bats were observed emerging from these trees.

Based on the low levels of bat activity within the Site shortly after sunset and right before sunrise, it is considered unlikely that there are bats roosting within the immediate locality of the proposed development. The surveys did identify bats commuting and foraging along sections of the treelines / scrub areas, to the south and east of the Site and within the golf course area to the south.

Overall, the Site is considered to be of Low importance for roosting, commuting and foraging bats within the local area as the Site is partially illuminated at night and the Site is located within a built-up environment. Provided that the mitigation measures presented within this report are followed, it is considered that potential impacts on bats from the proposed development will be Negligible.

6 REFERENCES

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APPENDIX C

Client:

EQUINIX

HAZARD IDENTIFICATION LEGEND:

HAZARD IDENTIFICATION (if none state 'none relevant')	CONTROL AND MITIGATION MEASURES

NOTE:
Hazards listed above are only those considered significant risks and:

a) not likely to be obvious to a competent contractor or other designers;
b) unusual; or
c) likely to be difficult to manage effectively

P04	27/05/22	Issue for Planning	MA	JW	JW
P03	17/02/22	Issue for CFI	HM	JW	JW
P02	09/11/21	Planning Compliance	HM	JW	JW
P01	17/06/21	Issued for Planning	HM	JW	JW
REV	DATE	DESCRIPTION	DWN	CHK	APP

Key:

True North

Project:
Equinix DB8

Drawing Title:
Proposed Landscape Masterplan

Drawing Number:
DB080-MA-LS-XX-DR-L-PLNT-1050

Scale:	Paper Size:	Purpose:	Revision:
1:500	A1	S4	P04

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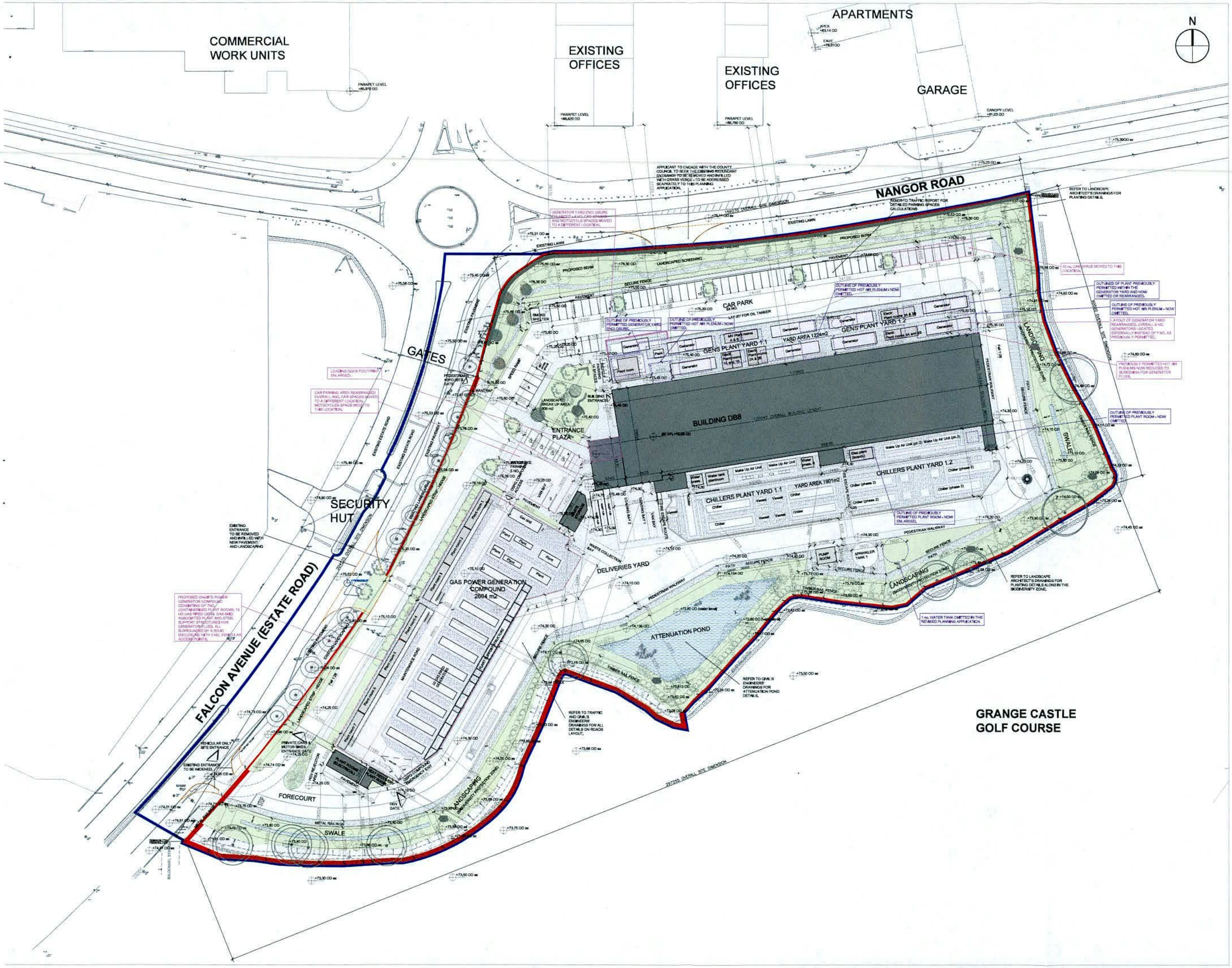

Client:

EQUINIX

HAZARD IDENTIFICATION LEGEND:

HAZARD IDENTIFICATION (if none state 'none relevant')	CONTROL AND MITIGATION MEASURES

NOTE:
Hazards listed above are only those considered significant risks and:

a) not likely to be obvious to a competent contractor or other designers;
b) unusual, or
c) likely to be difficult to manage effectively

LEGEND

- SITE BOUNDARY SITE AREA = 6,545 acres
- AREA IN OWNERSHIP OF CLIENT - AS PER OS MAP AREA = 7,360 acres
- NEWLY PROPOSED ELEMENTS SUBJECT TO THIS PLANNING APPLICATION
- AMENDMENTS TO PREVIOUSLY APPROVED PLANNING APPLICATION REG. REF. SD21A/0186
- PROPOSED BUILDINGS
- CONTAINERIZED PLANT ROOMS
- FEATURE PAVING
- PAINTED WALKWAYS 1.8/2M WIDE
- CONCRETE PATHS IN PLANT YARDS
- GRAVEL
- GRASS-CRETE
- EXISTING LANDSCAPED AREA
- PROPOSED LANDSCAPED AREA
- PROPOSED ATTENUATION POND /SWALES
- SECURITY FENCE
- TIMBER RAIL FENCE
- EXISTING METAL RAILING
- EXISTING TREES - REFER TO LANDSCAPE DRWG FOR DETAILS.
- PROPOSED TREES AND SHURBS - REFER TO LANDSCAPE DRWG.

REV	DATE	DESCRIPTION	DWN	CHK	APP
P04	20/05/22	Issued for planning (II)	MB	JS	JS
P03	24/02/22	Clarification for Further Information	MB	JS	JS
P02	25/11/21	Issued for Further Information	MB	JS	JS
P01	21/06/21	Issued for planning	MB	JS	JS

All dimensions to be checked on site. Figured dimensions take preference over scaled dimensions. Any errors or discrepancies to be reported to the Architects. This drawing may not be edited or modified by the recipient.

Key:

Project:
Equinix DB8

Drawing Title:
Proposed Site Layout Plan

Drawing Number:
DB080-RKD-00-ZZ-DR-A-SITE-1035

Scale:	Paper Size:	Purpose:	Revision:
1:500	A1	S4	P04

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DESIGN ISSUE

THE DESIGN IS SUBJECT TO PLANNING APPROVAL AND DETAILED DESIGN.

Client:

EQUINIX

HAZARD IDENTIFICATION LEGEND:

HAZARD IDENTIFICATION (if none state 'none relevant')	CONTROL AND MITIGATION MEASURES

NOTE:
Hazards listed above are only those considered significant risks and:

a) not likely to be obvious to a competent contractor or other designers;
b) unusual; or
c) likely to be difficult to manage effectively

LEGEND

- PROPOSED PRIVATE SURFACE WATER SEWER
- PROPOSED PRIVATE FOUL SEWER
- EXISTING PRIVATE FOUL WATER SEWER
- EXISTING PRIVATE SURFACE WATER SEWER
- EXISTING PUBLIC FOUL SEWER
- EXISTING PUBLIC SURFACE WATER SEWER
- MANHOLE BACDROP (BDI)
- DRAINAGE CHANNEL
- FIN DRAIN
- TX — INTERNAL FOUL GULLY PIPE
- G — ROAD GULLY
- RE — RODDING EYE
- SU — SURF UNIT WITH RODDABLE AIR TRAP
- SVP — SOIL VENT PIPE
- SS — STUB STACK
- AAV — AIR ADMITTANCE VALVE
- FIT — FOUL INTERCEPTOR TRAP
- RWP — RAINWATER DOWNPIPE
- SRWP — SIPHONIC RAINWATER DOWNPIPE
- 69.200 — PROPOSED LEVEL
- 69.200 — EXISTING TIE IN LEVEL
- +67.72 — EXISTING LEVEL
- SITE BOUNDARY
- SUDS ATTENUATION POND
- SUDS ATTENUATION SWALE 1
- SUDS ATTENUATION SWALE 2

PLANNING REGISTRATION REFERENCE:
SD21A/0186

P04	26.04.22	SITE LAYOUT REVISED, SW LAYOUT UPDATED	FJ/RUM
P03	08.02.22	CR RESPONSE	FJ/RUM
P02	17.09.21	ISSUED FOR TENDER	FJ/RUM
P01	20.08.21	ISSUED FOR FORMAL REVIEW	FJ/RUM
REV	DATE	DESCRIPTION	DWN CHK APP

Key:

NOTE:
REFER DRAWING
DB080-PIN-00-ZZ-DR-C-PLAN-1296
FOR SUDS TYPICAL DETAILS

REFER DRAWING
DB080-PIN-00-ZZ-DR-C-PLAN-1295
FOR CATCHMENT LAYOUT

DRAINAGE NOTES:
1. ALL FOUL SEWERS, MANHOLES AND CONNECTIONS TO BE CONSTRUCTED IN ACCORDANCE WITH IRISH WATER CODE OF PRACTICE FOR WASTEWATER INFRASTRUCTURE AND IRISH WATER WASTEWATER INFRASTRUCTURE STANDARD DETAILS.
2. ALL FOUL SEWER HOUSE CONNECTIONS TO BE MIN 100MMØ UPVC TO IS EN 1401 2009/2012, STIFFNESS CLASS 8KN/M2 IN ACCORDANCE WITH IRISH WATER SPECIFICATIONS.
3. ALL PUBLIC FOUL SEWERS TO BE MINIMUM 225MM DIAMETER THERMOPLASTIC STRUCTURED WALL PIPES TO IS EN 13476 (2007/2009), TYPE SN8 AND WIS 4-35-01 (2008) AND COMPLY WITH THE REQUIREMENTS OF THE IRISH WATER CODE OF PRACTICE.
4. ALL PUBLIC SURFACE WATER SEWERS TO BE MINIMUM 225 DIA. CLASS H CONCRETE TO EN1916 & IS 6 2004 IN ACCORDANCE WITH THE GREATER DUBLIN REGIONAL CODE OF PRACTICE FOR DRAINAGE WORKS.
5. ALL SURFACE WATER CONNECTIONS TO BE MINIMUM 150MMØ UPVC TO IS EN 1401 2009/2012 IN ACCORDANCE WITH THE GREATER DUBLIN REGIONAL CODE OF PRACTICE FOR DRAINAGE WORKS.
6. LOCATION AND INVERT LEVELS OF EXISTING MANHOLES OR OUTFALL POINTS, WHERE APPLICABLE TO BE VERIFIED BY CONTRACTOR PRIOR TO COMMENCEMENT OF DRAINAGE WORKS.
7. ALL FOUL CONNECTIONS TO COMPLY WITH THE REQUIREMENTS OF THE IRISH WATER.
8. ALL FOUL SEWERS TO BE AIR TESTED IN ACCORDANCE WITH IRISH WATER SPECIFICATIONS.
9. ALL COVER LEVELS TO MATCH FINISHED ROAD/VERGE/FOOTPATH/CYCLETRACK LEVELS UNLESS OTHERWISE STATED.
10. CONTRACTOR TO INCLUDE FOR CCTV SURVEY OF ALL SEWERS UPON COMPLETION OF SAME.

Project:
EQUINIX DB081

Drawing Title:
SURFACE WATER
SITE DRAINAGE

Drawing Number:
DB080-PIN-00-ZZ-DR-C-PLAN-1207

Scale:	Paper Size:	Purpose:	Revision:
1:500	A1	D2	P04

PINNACLE
CONSULTING ENGINEERS

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