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Ecological Impact Assessment

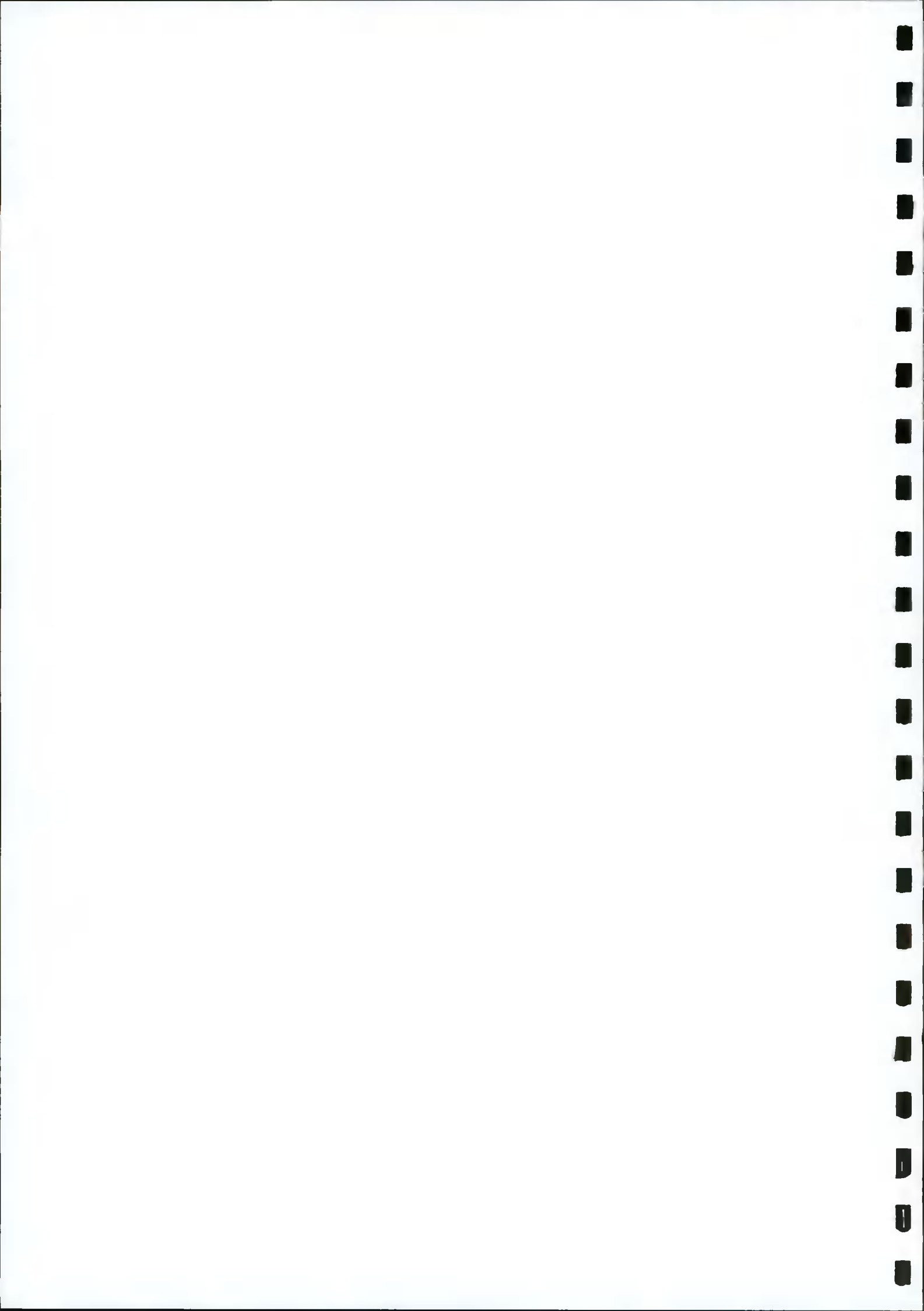
INXN DUB15/16

On behalf of
Digital Netherlands VII B.V.

Profile Park, Nangor Road,
Clondalkin, Dublin 22



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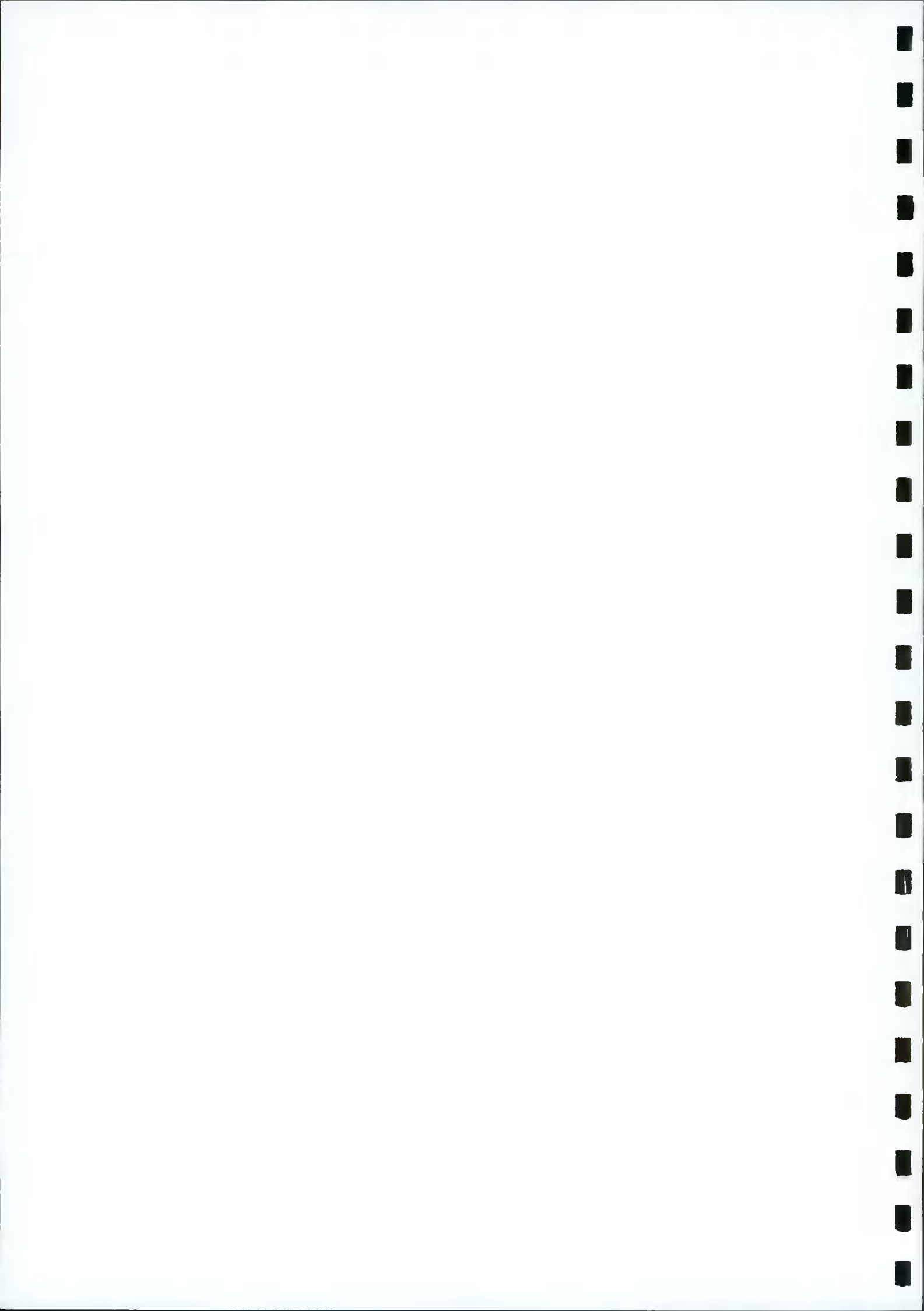
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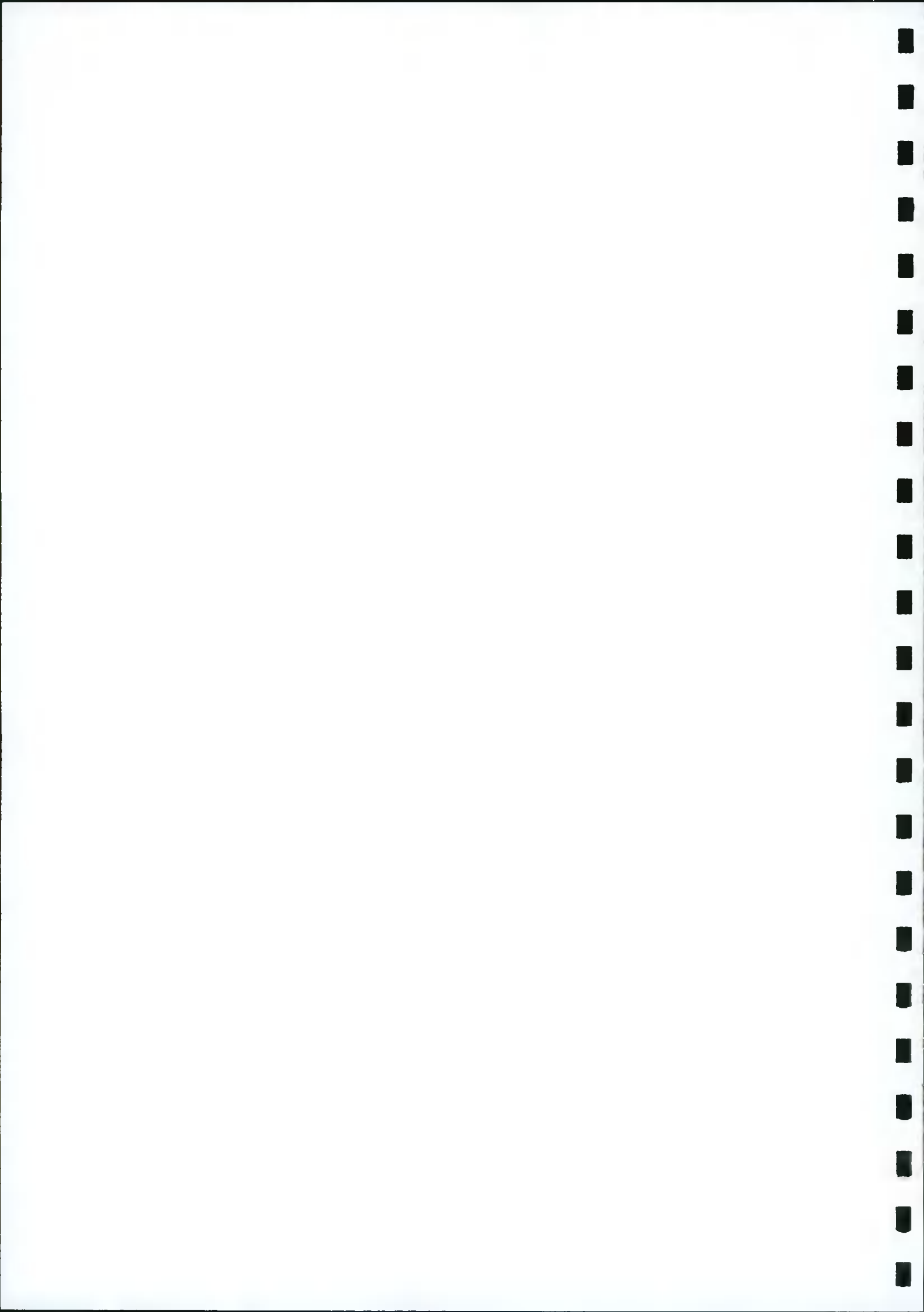
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Ecological Impact Assessment
INXN DUB15/16
Digital Netherlands VII B.V.
Profile Park, Nangor Road, Clondalkin, Dublin 22

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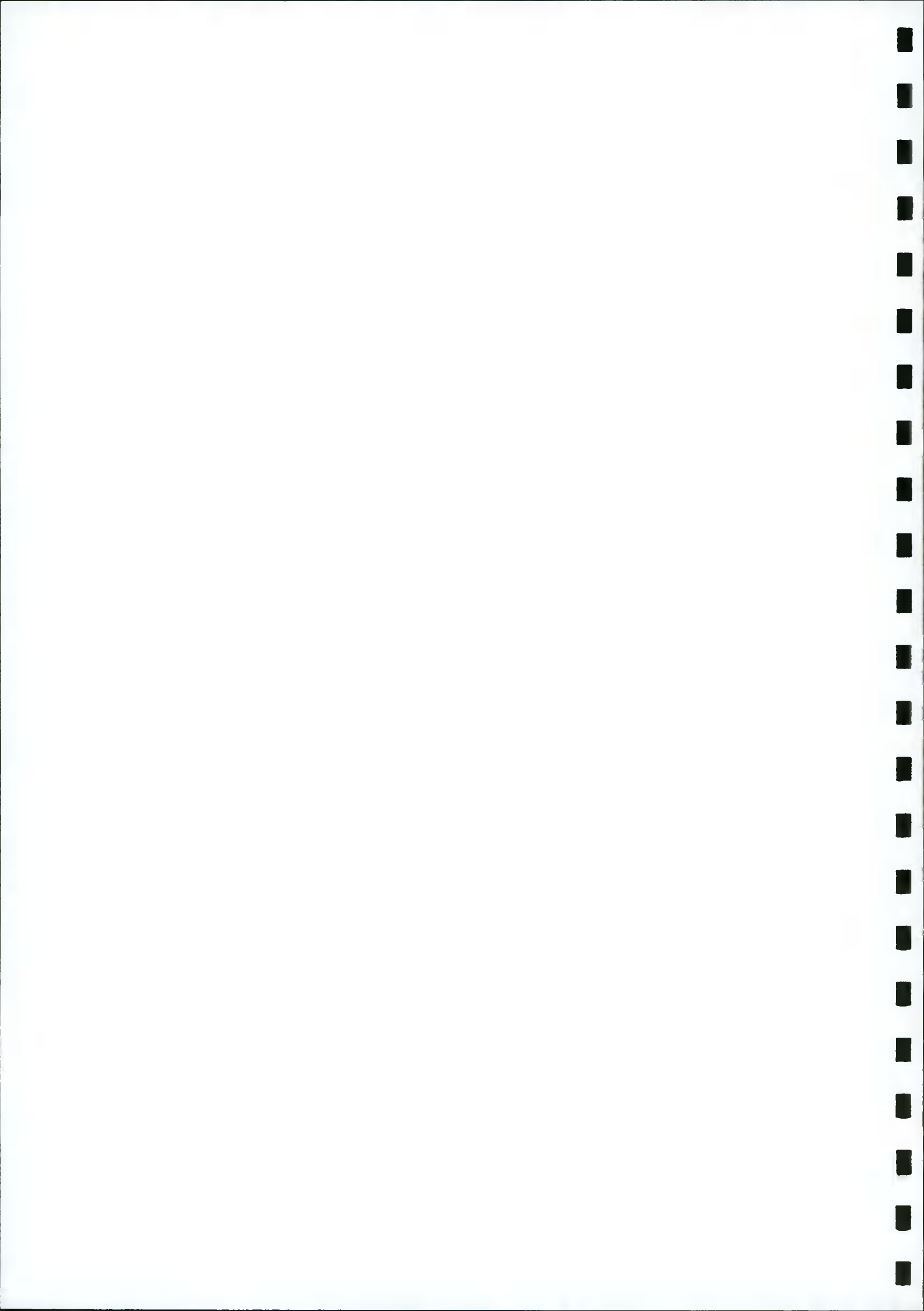


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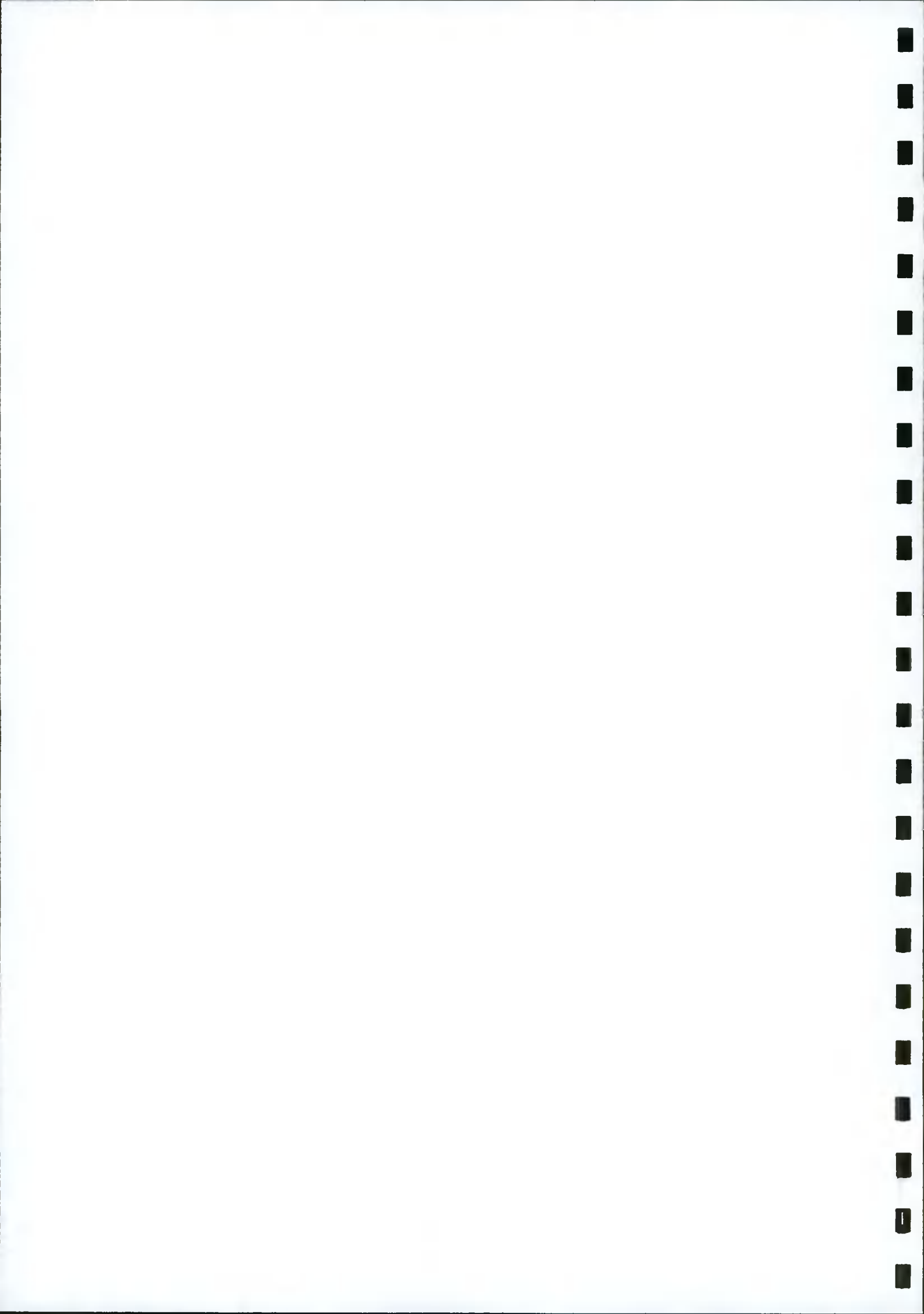
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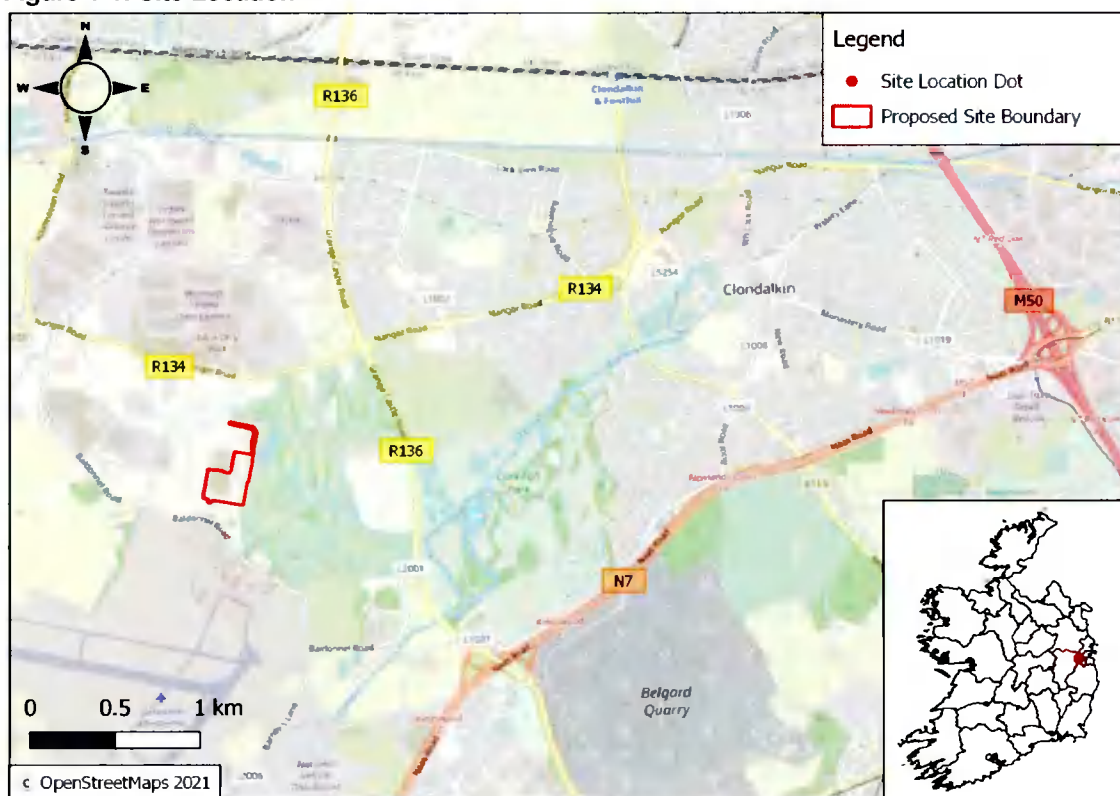
1 INTRODUCTION

1.1 Background and Purpose of Report

In response to a Request for Further Information (RFI), Malone O' Regan Environmental Services (MOR) were commissioned by RKD Architects Ltd. on behalf of Digital Netherlands VIII B.V. ('the Applicant') to update the Ecological Impact Assessment (EclA) submitted as part of planning for two (2No.) proposed data centres and all ancillary works at DUB 15 / 16, Profile Park, Nangor Road, Clondalkin, Dublin 22, Co. Dublin (Planning Reference: SD21A/0217).

The location of the proposed development ('the Site') is shown in Figure 1-1 (OS Reference O 03785 30338).

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): the legal requirements relating to the designation and management of SACs in Ireland are set out in the European Communities (Natural Habitats) Regulations 1997 (as amended) (Habs Regs);
- Special Protection Areas (SPAs): 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 afforded the same protection as NHAs under the Wildlife (Amendment) Act 2000 from the date that they are formally proposed for designation.

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 (Cummins, 2013); 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 (Government of Ireland, 2018). Project Ireland 2040 incorporates two policy documents i.e., National Planning Framework and the National Development Plan to 2027.

Under the biodiversity section "Project Ireland 2040 National Planning Framework" (Government of Ireland, 2018), National Policy Objective 59 states:

- *"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."*

National Policy Objective 60 in the same document states 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 (SDCC, 2016) 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 5:

'To integrate Green Infrastructure as an essential component of all new developments.'

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 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 4:

'To uncover existing culverts and restore the watercourse to acceptable ecological standards and for the passage of fish, where possible.'

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 riverbank 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.'

G4 Objective 5:

'To promote the planting of woodlands, forestry, community gardens, allotments and parkland meadows within the County's open spaces and parks.'

G5 Objective 1:

'To promote and support the development of Sustainable Urban Drainage Systems (SUDS) at a local, district and county level and to maximise the amenity and biodiversity value of these systems.'

G5 Objective 2

'To promote the provision of Green Roofs and/or Living Walls in developments where expansive roofs are proposed such as industrial, retail and civic developments.'

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 2:

'To require new development to provide links into the wider Green Infrastructure network, in particular where similar features exist on adjoining sites.'

G6 Objective 3:

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

HCL1 Objective 1:

'To protect, conserve and enhance natural, built and cultural heritage features and restrict development that would have a significant negative impact on these assets.'

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.'

2 METHODOLOGY

2.1 Assessment Methodology for Prediction of Effects

The EclA process was undertaken in parallel with the proposed development design with a view of minimising the adverse ecological effects of the proposed development and, where possible, delivering benefits for biodiversity. Desk study data collection and field survey work were carried out as part of the EclA 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. The starting point was that significant effects on designated nature conservation sites were unlikely to occur over 2km from the proposed Site boundary. However, adopting the precautionary principle, all SACs and SPAs within a 15km radius and all nationally designated sites for conservation within a 5km radius of the proposed development Site have been identified and impacts considered. Significant effects on priority habitats and species were considered unlikely at over 1km away. 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/>) (NPWS, 2021);
- The National Biodiversity Data Centre (NBDC) website was consulted with regard to species distributions (<https://maps.biodiversityireland.ie/Map>) (NBDC, 2022); and,
- The EPA Envision website was consulted to obtain details about watercourses in the vicinity of the Site (<https://gis.epa.ie/EPAMaps/>) (EPA, 2022).

2.3 Field Survey

2.3.1 Habitat Survey

The initial Habitat surveys were undertaken on 4th March 2021 by a Senior MOR Ecologist, with follow up surveys undertaken on the 24th of May and the 8th of June. The initial survey 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.

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.

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 at the Site to confirm if any of the trees were being used by roosting bats and to establish the level and type of bat activity onsite. These surveys were conducted on the 24th 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 – Bat Report)

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 Aquatic Surveys

As part of the proposed development works, the Baldonnell Stream will be rerouted. Therefore, an additional Stream Assessment was undertaken by Sweeney Consultancy to evaluate the ecological value and impact of the proposed in-river works. The following methodology was followed:

- Historical mapping was consulted to check the earlier course of the stream.

- Field surveys were undertaken on 4th May 2021. The stream habitat quality was assessed, based on its physical nature and ecology.
- Grid reference of photographs were recorded using a hand-held GPS device and photographs were taken with a digital camera.
- A pond-net sample was taken at ITM 703847 730198, and invertebrates were identified on the bankside to the lowest taxonomic level possible with the naked eye.
- The biological water quality was assessed following the most recent EPA Standard Operational Procedure for the Q-scheme methodology, which is based primarily on analysis of the aquatic invertebrate fauna.
- The habitat quality of a drain along a field boundary to the east, to which it is proposed that the stream be re-routed, was assessed visually.

2.3.4 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 1st April 2021 with South Dublin County Council (SDCC).

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 10m riparian strip between the buildings and the Baldonnell Stream, that heavy engineering interventions on the stream should be kept at a bare minimum and natural attenuation, ponds and swales be used where possible.

Consultation was undertaken with Inland Fisheries Ireland (IFI) on the proposed rerouting of the Baldonnell Stream and a Site visit was held on the 18th of June 2021. Follow up consultation was undertaken on the 11th of February 2022.

IFI had no objection in principle with the proposed re-alignment of the stream. IFI are of the opinion that the proposed route would provide a more natural riparian area for the stream. If planning is granted, IFI stipulated that this work must be carried out in accordance with an agreed design and method statement. The updated consultation with IFI confirmed that they approve of the proposed landscape plan / stream design and are satisfied with the approach of achieving ecological maturity through natural colonisation from upstream and downstream of the diverted section.

Consultation was sought with the heritage officer of SDCC on the 11th February 2022 and the revised landscape masterplan for the Site was issued for comment.

2.5 Assessment Methodology

The current Guidelines for Ecological Impact Assessment in the UK and Ireland (CIEEM, 2016) recognise that an ecological assessment cannot consider in detail every individual species or habitat that may potentially be affected by a proposed development. The EclA 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 EclA 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 EclA 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 EclA (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 Kilbride, Dublin 22, in the Profile Park business park. The Site of the proposed development is ca.61,810 square metres (m²). Under the South Dublin County Development Plan 2016-2022, the majority of the Site is zoned under objective EE which aims to, 'provide for enterprise and employment related uses.' however, a small portion of the Site to the south is currently zoned under objective RU which aims to, 'protect and improve rural amenity and to provide for the development of agriculture.'

The Site is accessed from the existing Site entrance on the Profile Park Road via the R134 regional road. The Profile Park Road currently runs through the central region of the Site. Directly to the east of the Site lies the Grange Castle Golf Club, the Google Data Centre is located to the west and the Baldonnell Road (L2001), Kilbride cemetery and the Baldonnell Casement Aerodrome lies to the south.

Immediately to the northwest of the Site are existing buildings and artificial surfaces which transition to areas of improved agricultural grassland, disturbed ground and spoil heaps within the Site boundaries. The disturbed ground within the southwest portion of the Site is predominantly bare or overgrown with ruderals / weeds and is composed of construction and demolition material. There is also an area of scrubland and the remains of an old, decommissioned sewage building to the east of the Site. A dry ditch runs along the southern boundary of the Site while a wet ditch is located along the eastern boundary of the Site, adjacent to a mature hedgerow / treeline. The Baldonnell Stream bisects the Site.

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] (EPA, 2022).

There is one hydrological feature of note within the vicinity of the Site. The Baldonnell Stream bisects the Site. The proposed development requires this stream to be rerouted east of its current course along the existing eastern drainage ditch onsite.

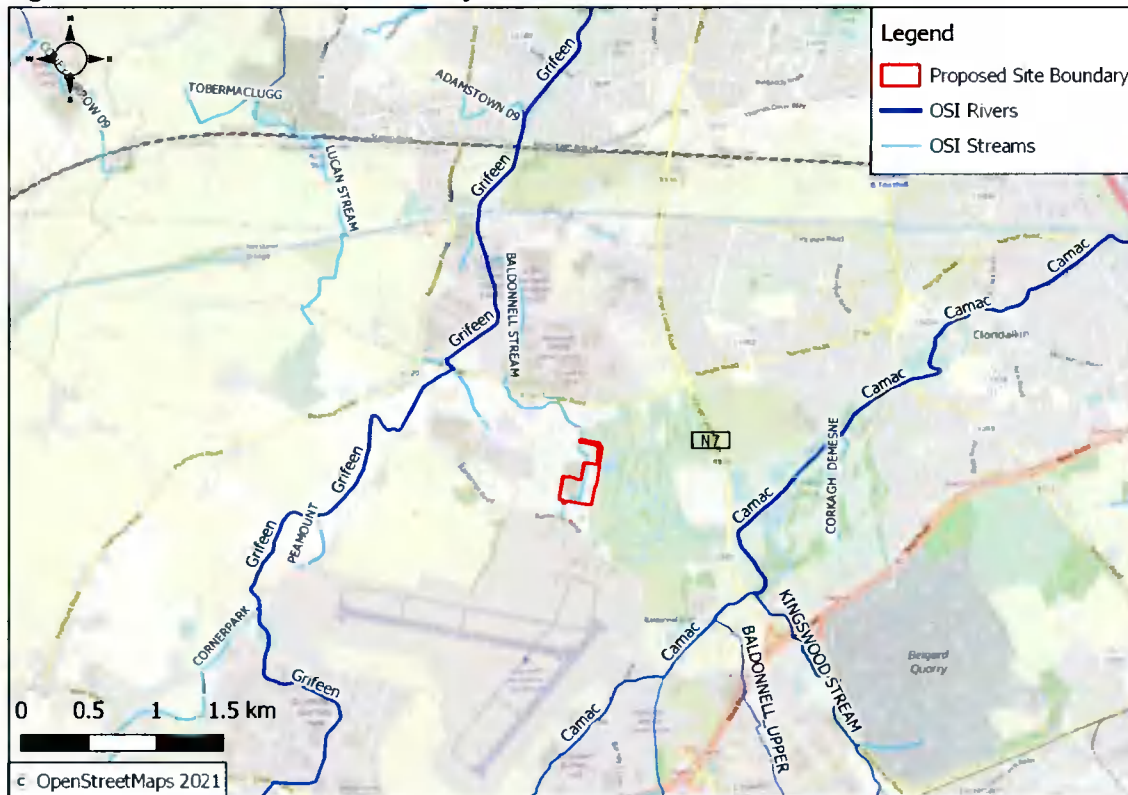
The Baldonnell Stream is a tributary to the Griffeen River and flows in a north / north-westerly direction for ca. 2.1km prior to discharging into the river. The Griffeen River flows in a northerly direction for ca. 4.2km from this convergence point, crossing under the Grand Canal through a siphon system, 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 27.4km 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 Griffeen River and the section of the River Liffey where the Griffeen River joins have 'moderate' water quality status but their risk of not achieving a high water quality status is currently under 'review' (EPA, 2022). However, further downstream (ca.7.0km from the Site) the River Liffey is considered to be 'at risk' with an unassigned water quality (EPA, 2022).

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 Ditches

A dry ditch runs along the southern boundary of the Site while a wet ditch is located along the eastern boundary of the Site, adjacent to a mature hedgerow / treeline.

During the time of survey, the eastern ditch had no discernible flow; however, it got progressively wet towards the north of the Site. The dry ditch to the south of the Site is connected to the culverted stream.

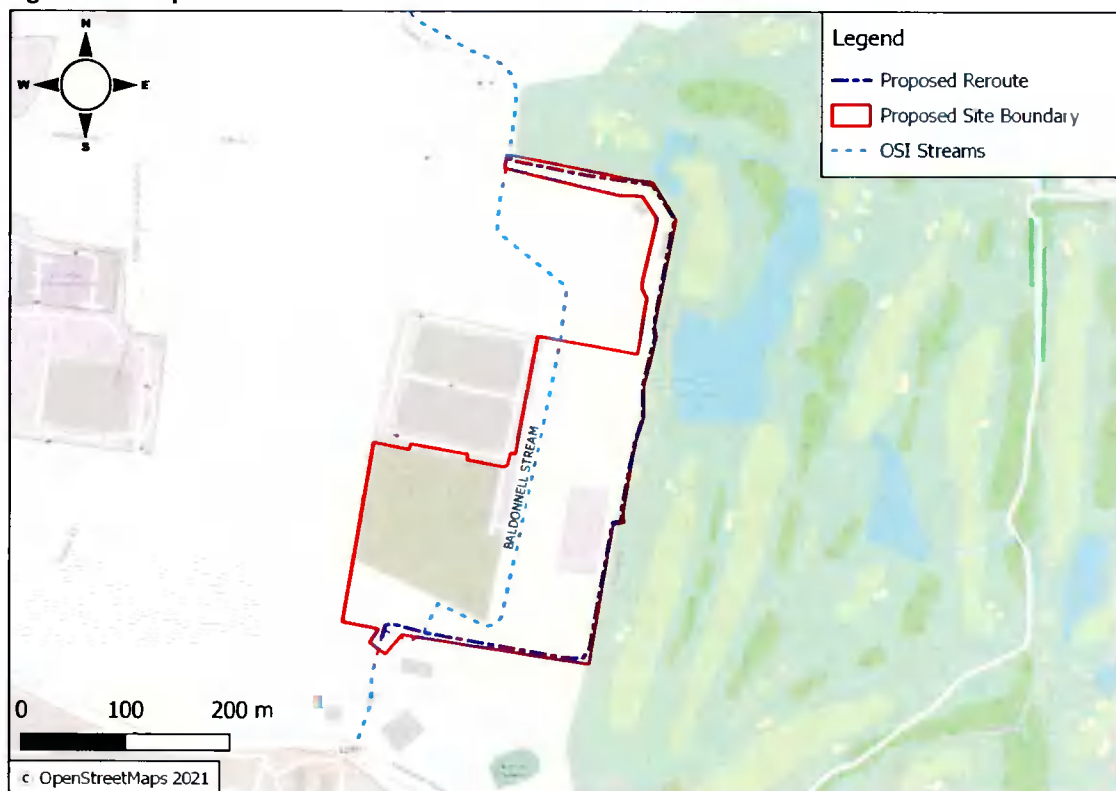
3.4 Proposed Development

The proposed development will consist of a 10-year permission for the following:

- Removal of an existing unused wastewater treatment facility onsite;
- Two (2No.) data centre buildings, DUB15 and DUB16, comprising of 8No. data halls and the various equipment areas required to support the IT servers contained within them. These buildings will comprise a total floor area of 33,577m² over two-storeys;
 - The first two storey data centre building (DUB15), located to the southwest of the Site, will comprise 16,865m² data storage use, ancillary office use and associated electrical and mechanical plant rooms, loading bays, maintenance and storage space;
 - A second two storey data centre building (DUB16), located to the southeast of the Site, will comprise 16,712m² data storage areas, ancillary office use and associated electrical and mechanical plant rooms, loading bays, maintenance and storage space; and,

- Both data centre buildings will reach a height of 20m and will be enclosed by plant screens with areas containing green trellises. Green roofs will be incorporated over the administration sections of both data centre buildings.
- Emergency generators and associated emission flues and plant are proposed in compounds adjacent to each data centre building;
- A storm-water attenuation pond alongside additional Sustainable Urban Drainage (SUDs) measures will be implemented onsite to control surface water run-off;
- The application proposes to re-route a watercourse, which was previously constructed through the centre of the Site pursuant to an earlier planning permission. It is proposed to reroute this watercourse along the eastern and southern boundary of the Site, refer to Figure 3-2 for indicative location;
- Landscaping is proposed to the south of the Site to screen the buildings;
- Other ancillary buildings throughout the Site include a pump room (ca.52m²) and two (2No.) refuse stores (ca.25m²). The total floor area of all ancillary structures is ca. 2,717m².
- Fencing and security gates are proposed around the Site; and,
- New access roads within the Site are proposed alongside 71No. car parking spaces, 26No. cycle spaces, bin stores, Site lighting and all associated works including underground foul and storm water drainage attenuation and utility cables.

Figure 3-2 Proposed Stream Diversion



3.4.1 Data Centre Buildings

Each data centre building will be a two-storey building, (ground and first floors). Each floor will be identical, comprising of 4No. data halls on each floor, it is within these data halls where the

IT servers will be located. Electrical switch-rooms will be located internally adjacent to the data halls.

Equipment for data hall cooling will be located on the roof of the building, with standby emergency generators located in external compounds at ground level.

The following will be accommodated in each of the main building areas:

- Data Centre Technical Areas;
 - Data halls;
 - Low voltage switchgear, UPS and battery rooms;
 - Water services plant room;
 - Fire suppression tank and valve rooms;
 - Storage and waste areas;
 - POP and IDF rooms;
- External Ground Level;
 - Containerised MV generators (with belly fuel tanks);
 - Containerised MV switchgear;
- Office and Logistics Area;
 - Security and entrance facilities;
 - Loading bay and debox area;
 - Toilets and showers;
 - Office areas;
- Roof;
 - Air handling units providing fresh air to the offices and other Power Base Build (PBB) spaces;
 - Air handling units providing make-up air the data halls;
 - Air handling units providing make-up air to electrical plantrooms (UPS rooms and battery rooms);
 - Medium voltage switchrooms;
 - MV/LV transformers; and,
 - Refrigerant condenser systems (direct expansion and variable refrigerant volume) supporting space heating and cooling units, and their air handling units.

Each building will have its own standalone back-up generator system from the containerised generators located adjacent to each building. In total there will be a maximum of 32No. generators across the Site if the full upgrade potential is deployed. These shall provide power to the Site in the event of a grid outage.

3.4.2 Power

The proposed development will import power from the grid. This will allow the data centre to use renewable power when available. Utility power feeds will connect directly to the MV fundamental block switchrooms located at roof level.

The incoming voltage to the Site will be rated at 11kV.

3.4.3 Fuel Storage

During the operational phase of the proposed development, there will be 32No. backup diesel generators onsite. These will require 859,248 litres of fuel which will be stored in 'belly tanks' within each generator container. All fuel storage will be integrally banded with leak detection systems that conform to Irish regulations.

3.4.4 Earthworks

The development of DUB13 and DUB14, the two (2No.) existing data centres immediately northwest of the Site, involved bulk excavation of material and the remaining stockpiles and made ground are currently located within the southwest area of the Site.

Enabling works will include the removal of these existing stockpiles onsite for recovery and disposal at a licensed facility. It will also include for the excavation and removal of the decommissioned sewage treatment works and associated buried structures and foundations. These excavations will be filled with suitable engineering fill to allow for the construction of DUB16.

Additional Site clearance and preparation works will include service diversions and works associated with the diversion of the Baldonnell Stream and the creation of the attenuation pond.

During enabling works, unsuitable material or made ground encountered onsite will be excavated under all structures and associated infrastructure for removal from Site to a suitably licensed facility and replaced with suitable engineering fill.

The suitability of the excavated materials for re-use as acceptable earthworks fill will be assessed in accordance with the requirements of the TII Specifications for Roadworks.

3.4.5 Drainage

Drainage from the proposed DUB15, DUB16 and Switch Room shall be drained by a completely separate system, with separate foul and surface water drains. The outfall of the proposed surface water system will discharge into an attenuation pond, which after completion of the proposed development will cater exclusively for surface water run-off coming from the proposed development before discharging to the Baldonnell stream.

Foul water drainage will outfall and discharge into the existing Profile Park private foul drain network along The Fairways estate road which subsequently discharges into existing Irish Water Foul Sewer. See attached Drainage Layout.

The drainage systems have been designed in accordance with Part H Building Regulations, BSEN 752 Drain and Sewer Systems outside Buildings, the Greater Dublin Regional Code of Practice for Drainage Works, the Greater Dublin Strategic Drainage Study (GSDSDS) and to the requirements of South Dublin County Council and Irish Water.

3.4.5.1 Surface Water

Surface water run-off from the proposed development shall drain by gravity via the proposed swales and pipe network to the attenuation pond located within the northeast portion of the Site. The attenuation pond has been designed to contain a permanent pool of standing water alongside a hydrobrake which will limit the discharge to green field run-off rate, refer to Appendix A for Drainage Layout.

Surface water discharges from the Site will be restricted in line with the Greater Dublin Regional Code of Practice for Drainage Works and South Dublin County Council Water Services requirements to 1.99 litres/second/hectare. Any flows in excess of the allowable

discharge rate will be retained onsite in the proposed attenuation pond for storms up to and including the 1 in 100-year event + 20% climate change allowance. Additionally, SuDS measures will be incorporated into the development to improve the quality of waters discharging into the receiving surface water system, namely green roofs, interceptors porous paving and swales will allow for partial infiltration whilst excess run-off from roads and these areas will be directed through Class 1 bypass petrol interceptors and an attenuation pond prior to reaching the Baldonnell Stream. The run-off from refuelling areas next to the generator yards will be collected via the proposed surface water drainage system (outlined in Appendix A) and directed through Class 1 Full Retention Petrol Interceptors fitted with carbon monitors and lockdown valves.

Peak surface water discharges from the Site (particularly during storm events) will be substantially reduced due to the restricted outflow from the proposed development, thereby reducing the impact on the receiving drainage network. Also, the proposed watercourse diversion will significantly improve the existing surface water strategy throughout the Site, with benefits related to the quantity and quality of the water, amenity value and biodiversity.

3.4.5.2 Foul Drainage

Foul drainage from the proposed development shall be drained by a separate system to that of the surface water drainage system. Foul drainage from the proposed development shall drain by gravity and discharge to the existing 225mm foul drainage system along the Fairways Road, of Profile Park ownership, which subsequently discharges into Irish Water Foul sewer. No new connections will be required to the public sewerage system and Irish Water have confirmed that the additional discharge from the Site is feasible without the need for an 'infrastructure upgrade,' refer to Surface Water Drainage Report for further details.

3.4.6 External Lighting

External lighting will be provided outside the main structures and within the car-parking areas. A lighting plan has been submitted as part of the overall application, reference IE-DUBZZ-STE1-E0-ARP-DR-E-63000.

3.4.7 Landscaping

The proposed development design includes for boundary landscaping works. The proposed layout masterplan, reference IEDUBZZ-STE1-EO-MAL-LA-L-91001 and attached as Appendix D, presents both boundary and internal site breakout landscaping works.

3.5 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 application 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 (CIRIA, 2011);
- CIRIA C741- Environmental Good Practice on Site (4th edition) (CIRIA, 2015);
- Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes (NRA, 2005);

- Guidance for the Treatment of Bats Prior to the Construction of National Road Schemes (NRA, 2006);
- Guidance for the Treatment of Badgers Prior to the Construction of National Road Schemes (NRA, 2006);
- Guidelines on the Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads (NRA, 2010); and,
- All works will be undertaken in accordance with the 'Requirements for the Protection of Fisheries Habitat during Construction and Development' (Inland Fisheries Ireland , 2016).

It is envisaged that the construction works will take approximately 60 months to complete. It is anticipated that the construction activities for the DUB15 building, and all landscaping and external areas will take 18-months and that construction works for the DUB16 building are anticipated to last 10-months. The buildings are planned to be fitted out and commissioned in 6-month phases, with 4 fit out and commissioning phases per building.

Works will be limited to:

- Monday - Friday 07:00 hours – 18:00 hours
- Saturday 08:00 hours – 14:00 hours
- Sundays and Public Holidays Closed

An Ecological Clerk of Works (ECoW) will be appointed to the project and inspect the Sites in advance of works commencing and will undertake monthly Site inspections during the works as well as being present during away works adjacent to or near any waterbodies or the trees lines to ensure that they will be completed in line with the mitigation measures detailed within the CEMP.

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 (European Commission, 2002) and objectives HCL12 and HCL15 of the SDCDP (SDCC, 2016), 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 (DoEHLG, 2009) 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 site; the presence of impact pathways; the sensitivities of the ecological receptors; and the potential for in-combination effects.

Adopting the precautionary principle, all SAC and SPA sites within a 15km radius of the proposed development Site have been considered (Refer to Figure 4-1).

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

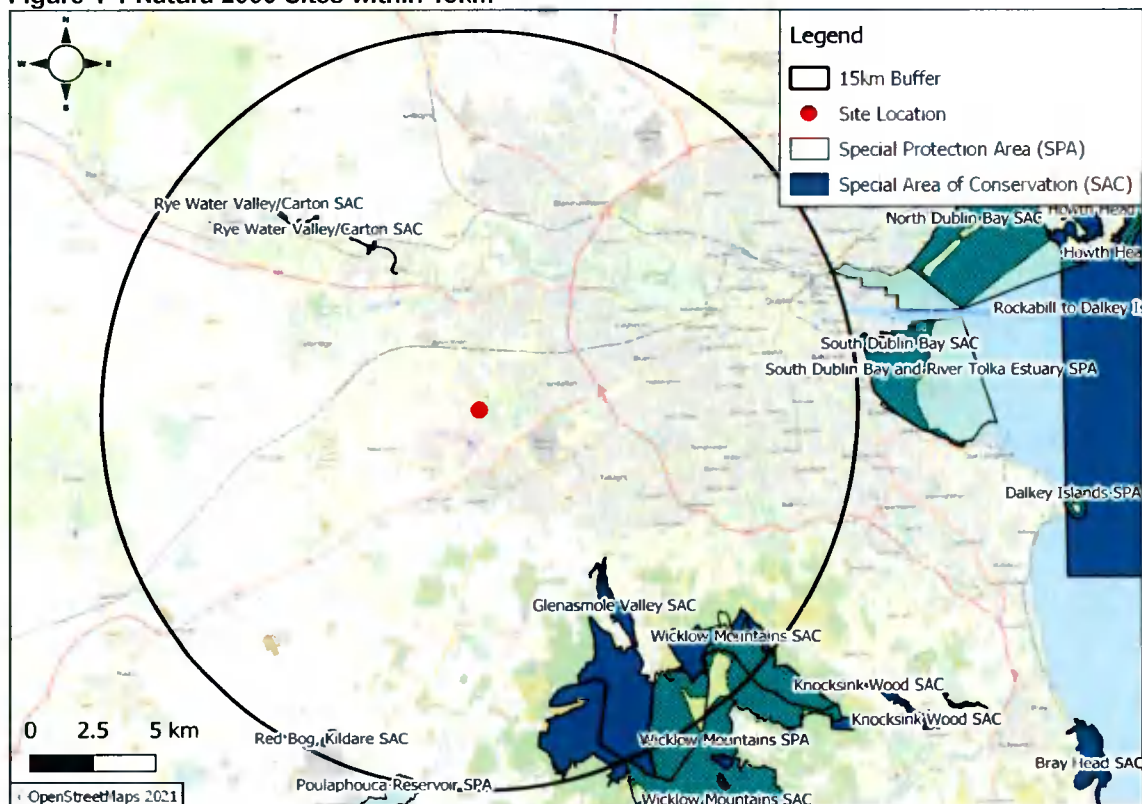


Table 4-1 Natura 2000 Designated Sites within 15km of the Site

Site Name	Code	Distance (km)	Direction from the Site
Special Areas of Conservation (SAC)			
Rye Water Valley / Carton	001398	6.2km	NW
Glenasmole Valley	001209	7.5km	SE
Wicklow Mountains	002122	9.2km	SE
Red Bog, Kildare	000397	13.8km	SW
Special Protection Area (SPA)			
Wicklow Mountains	004040	12.7km	SE
Poulaphouca Reservoir	004063	14.7km	SW
South Dublin Bay and River Tolka Estuary	004024	14.9km	NE

The Site is not located within or directly adjacent to any Natura 2000 sites, however, the boundaries of the four (4No.) SACs and three (3No.) SPAs are located within 15km from the Site.

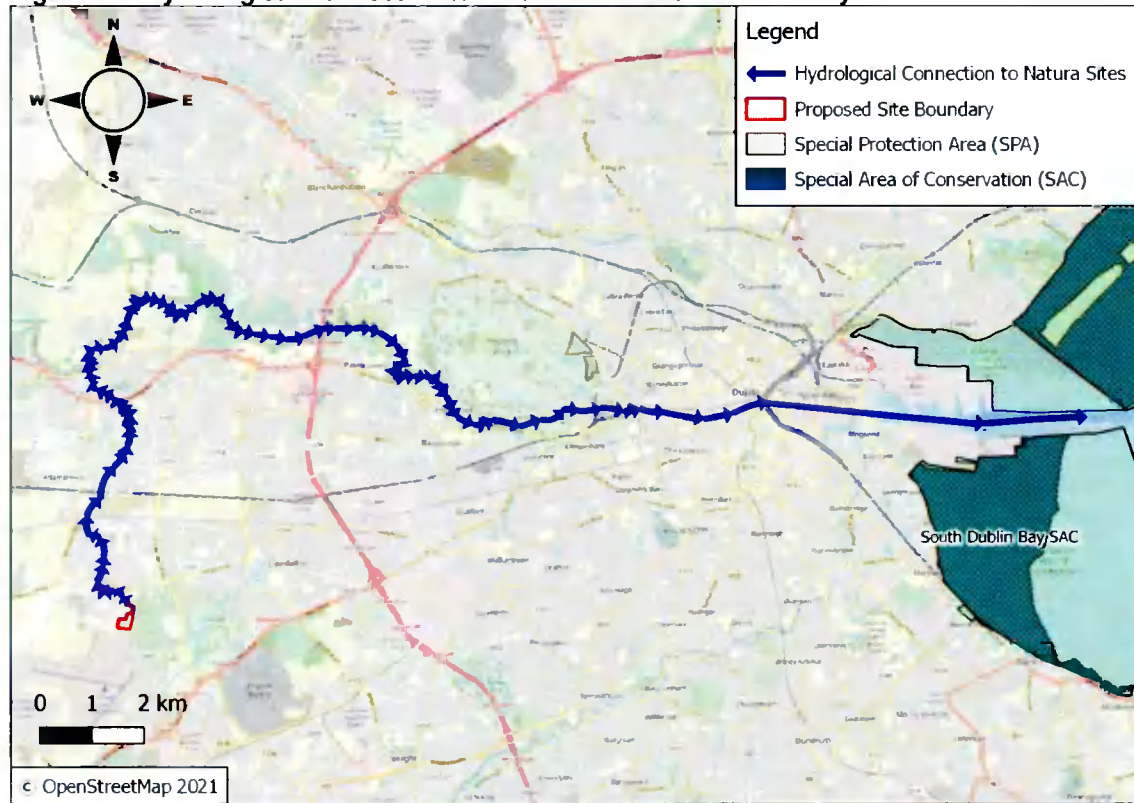
Given the distance, intervening lands and lack of impact pathways between the Site and the Glenasmole Valley SAC, Wicklow Mountains SAC, Rye Water Valley / Carton SAC, Red Bog, Kildare SAC, Poulaphouca Reservoir SPA and the Wicklow Mountains SPA, these Natura 2000 sites have been screened out from further consideration.

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

Although the South Dublin Bay SAC is also located downstream of the Site and is located only 15.3km NE of the Site boundary, 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. 27.4km 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, refer to Figure 4-2 for context.

Figure 4-2: Hydrological Connection to Natura 2000 sites in Dublin Bay



4.1.2 Nationally Designated Conservation Sites

There are no Natural Heritage Areas (NHA) located within 5km of the Site. However, there are three (3No.) 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

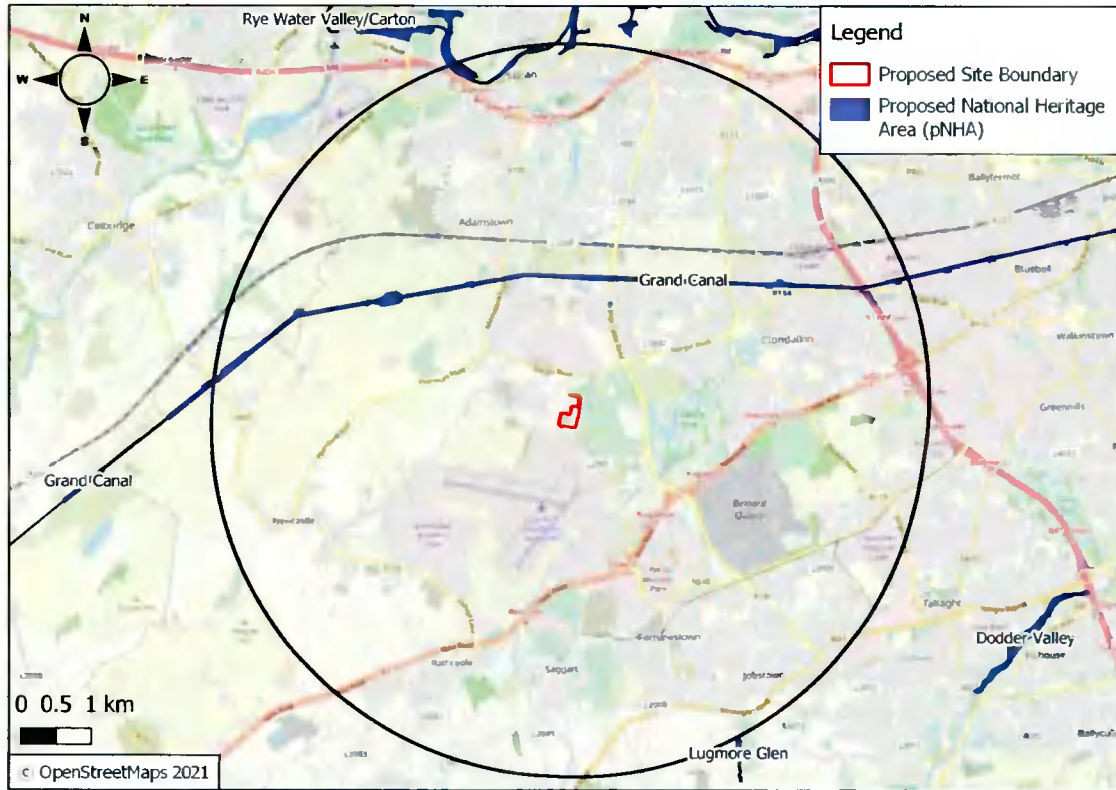


Table 4-2: National Protected Sites within 5km

Site Name	Code	Distance (km)	Direction from the Site
Proposed National Heritage Areas (pNHA)			
Grand Canal	002104	1.8km	N
Liffey Valley	000128	4.7km	N
Lugmore Glen	001212	4.9km	SE

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 (NBDC, 2022). However, ca.150m south of the Site is an area of high suitability for bats, ranging from 36.4-58.5 (NBDC, 2022).

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 (NBDC, 2022).

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

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

Common Name	Scientific Name	Date of last record*	Designation
Common Coot	<i>Fulica atra</i>	28/07/2016	Wildlife Acts 1976 / 2000 Birds of Conservation Concern Amber List
Common Swift	<i>Apus</i>	07/05/2016	Wildlife Acts 1976 / 2000 Birds of Conservation Concern Amber List
Common Wood Pigeon	<i>Columba palumbus</i>	28/03/2013	Wildlife Acts 1976 / 2000 EU Habitats Directive Annex II Section I and Annex III Section I Bird Species
House Martin	<i>Delichon urbicum</i>	14/07/2017	Wildlife Acts 1976 / 2000 Birds of Conservation Concern Amber List
Northern Wheatear	<i>Oenanthe oenanthe</i>	22/03/2019	Wildlife Acts 1976 / 2000 Birds of Conservation Concern Amber List
Sand Martin	<i>Riparia</i>	07/05/2016	Wildlife Acts 1976 / 2000 Birds of Conservation Concern Amber List
Bat Species			
Daubenton's Bat	<i>Myotis daubentonii</i>	19/08/2013	Wildlife Acts 1976 / 2000 EU Habitats Directive Annex IV
Soprano Pipistrelle	<i>Pipistrellus pygmaeus</i>	19/08/2013	Wildlife Acts 1976 / 2000 EU Habitats Directive Annex IV
Terrestrial Mammals			
Eurasian Badger	<i>Meles</i>	13/02/2016	Wildlife Acts 1976 / 2000
Eurasian Pygmy Shrew	<i>Sorex minutus</i>	14/08/2012	Wildlife Acts 1976 / 2000
West European Hedgehog	<i>Erinaceus europaeus</i>	29/07/2013	Wildlife Acts 1976 / 2000
Amphibians			
Common Frog	<i>Rana temporaria</i>	20/05/2019	Wildlife Acts 1976 / 2000 EU Habitats Directive Annex V
Crustaceans			
Freshwater White-clawed Crayfish	<i>Austroptopotamobius pallipes</i>	18/08/2013	Wildlife Acts 1976 / 2000 EU Habitats Directive Annex II
Invasive Species			
American Mink	<i>Mustela vison</i>	30/07/2018	High Impact Invasive Species Regulation S.I. 477 (Ireland)
Brown Rat	<i>Rattus norvegicus</i>	09/10/2015	High Impact Invasive Species Regulation S.I. 477 (Ireland)
Butterfly Bush	<i>Buddleja davidii</i>	11/06/2018	Medium Impact Invasive Species
Eastern Grey Squirrel	<i>Sciurus carolinensis</i>	30/07/2018	High Impact Invasive Species Regulation S.I. 477 (Ireland)
European Rabbit	<i>Oryctolagus cuniculus</i>	23/01/2017	Medium Impact Invasive Species
Greater White-toothed Shrew	<i>Crocidura russula</i>	26/03/2020	Medium Impact Invasive Species
Indian Balsam	<i>Impatiens glandulifera</i>	31/12/2017	High Impact Invasive Species Regulation S.I. 477 (Ireland)

Common Name	Scientific Name	Date of last record*	Designation
Japanese Knotweed	<i>Fallopia japonica</i>	07/05/2016	High Impact Invasive Species Regulation S.I. 477 (Ireland)
Spanish Bluebell	<i>Hyacinthoides hispanica</i>	07/05/2016	High Impact Invasive Species Regulation S.I. 477 (Ireland)

*Only species recorded within the last 10 years have been included in this table.

4.2 Field Survey

4.2.1 Habitats

The habitats described below were classified under Fossitt's: *A Guide to Habitats in Ireland* (Fossitt, 2000) and are all located within the Site.

Site Context and Surrounding Habitats

The Site is situated within the Profile Park business park. Directly to the east of the Site lies the Grange Castle Golf Club and immediately to the northwest lies two (2No.) commercial buildings which make up the current Digital Realty development. Further west lies the Google PPK Data Centre.

The Site is comprised of sparsely vegetated ground to the southwest, areas of improved agricultural grassland and scrub to the east. The Site is characterised by mature hedgerows / treelines along the eastern boundary, wet and dry drainage ditches and the Baldonnell stream and Profile Park Road which run through the northwest / central region of the Site. The remains of an old wastewater treatment plant (WWTP) are also present within the eastern portion of the Site.

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

Amenity Grassland (GA2)

A small strip of amenity grassland / lawn was identified between the built structures adjacent to the northwest corner of the Site and the access road. The area surveyed consisted of a perennial rye grass (*Lolium perenne*) monoculture and is of limited ecological value.

Recolonising Bare Ground (ED3) / Spoil and Bare Ground (ED2)

To the south of the existing commercial buildings are lands composed of disturbed ground and spoil heaps, some of which have recolonising ruderals or weeds, others are bare and have limited vegetation growth.

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*), bramble (*Rubus fruticosus*), ground ivy (*Glechoma hederacea*), and fringed willowherb (*Epilobium ciliatum*).

Improved Agricultural Grassland (GA1)

In the eastern and southern section of the proposed Site, an area of improved agricultural grassland was identified, which stretches to a mature hedgerow / treeline along the eastern boundary of the Site. This habitat is predominantly composed of perennial rye grass, white clover (*Trifolium repens*), creeping buttercup, meadow foxtail (*Alopecurus pratensis*), field mustard (*Sinapis arvensis*), common vetch (*Vicia sativa*), and dock species (*Rumex spp*). The southern section is zoned as agricultural lands, however, there were no grazing livestock present or evidence of agricultural usage onsite at the time of survey.

Scrub (WS1)

Two areas of scrub habitat were identified within the proposed Site Boundary. A small section to the south of the Site and a larger distinctive square section along the eastern border of the Site. It should be noted that remains of an old sewage building were situated within the larger section of scrub. Access was restricted due to overgrowth and Site Safety.

Species included large areas of bramble and nettle, along with willowherb, creeping buttercup, coltsfoot, red campion (*Silene dioica*), wild tulip (*Tulipa sylvestris*), ivy, hogweed, meadow foxtail, field mustard, common vetch, dog rose (*Rosa canina*), bitter dock (*Rumex obtusifolius*), thistle (*Asteraceae spp.*).

Hedgerow / Treeline (WL1 / WL2)

The eastern Site boundary is made up of a mature hedgerow / treeline. This habitat is comprised of ash (*Fraxinus excelsior*), hawthorn (*Crataegus monogyna*), blackthorn (*Prunus spinosa*), elder (*Sambucus nigra*), and hazel (*Corylus avellana*). Other species noted were crab apple (*Malus sylvestris*), Norway maple (*Acer platanoides*), Scot's pine (*Pinus sylvestris*) and beech (*Fagus sylvatica*).

Brambles and nettles 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 runs along the eastern boundary of the Site, adjacent to the hedgerow / treeline. The grassland onsite slopes towards this ditch which was predominately dry at the time of survey. However, this eastern drainage ditch gets progressively wet towards the northern end of the Site. The species noted within this ditch were watercress (*Nasturtium officinale*), butch vetch (*Vicia sativa*), perennial grass, bramble and nettles.

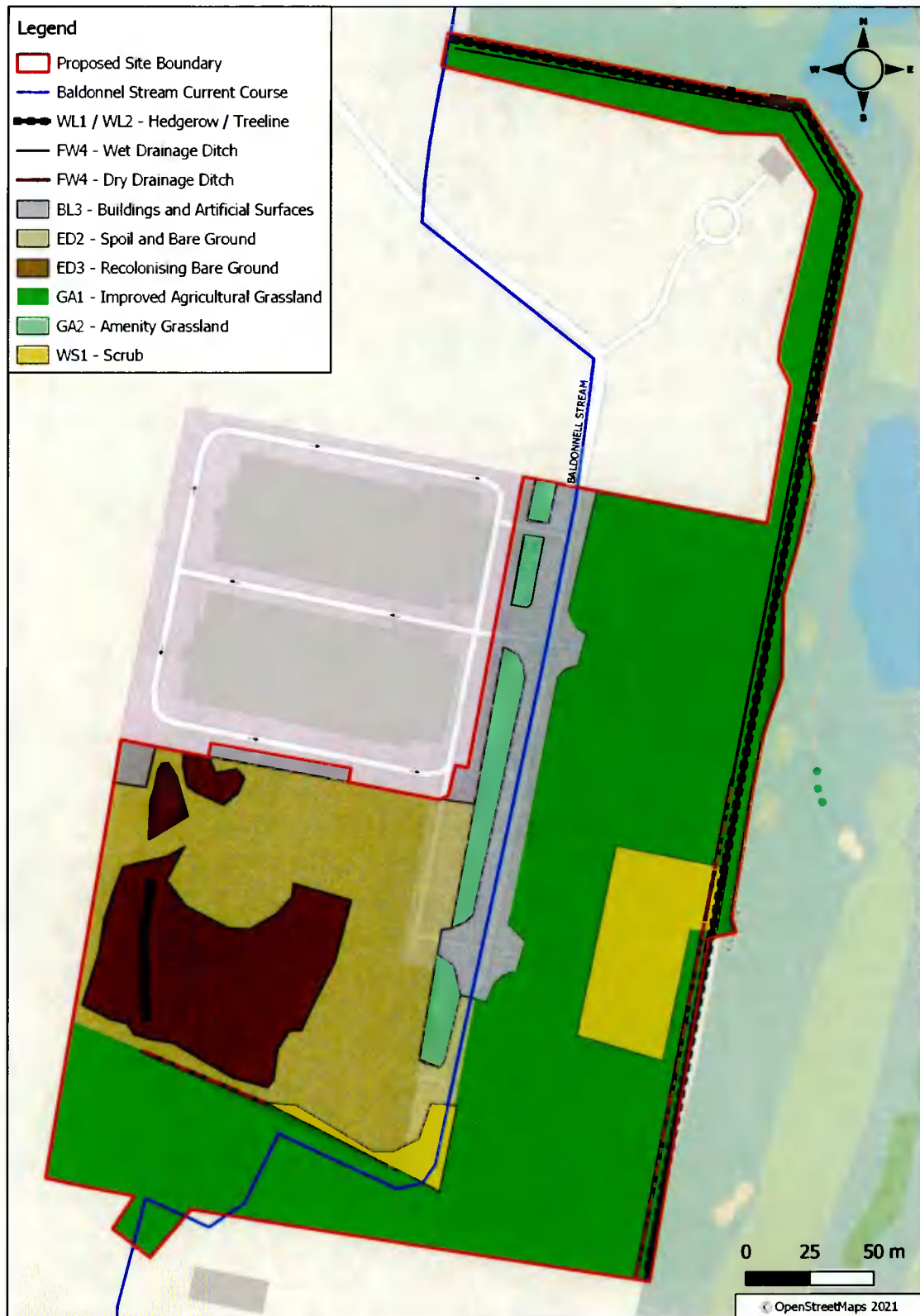
A second drainage ditch is present to the south of the Baldonnell Stream, this drainage ditch was dry at the time of the survey, however it is connected to the culverted stream.

Baldonnell Stream

The Baldonnell Stream flows through the northwest / central portion of the Site, to the east of the existing Digital Realty site. This stream is culverted in sections through round culverts and flows along the access track. It is currently enclosed by fencing.

An assessment carried out on the Baldonnell Stream by Sweeney Consultancy, attached as Appendix C, identified typical instream vegetation for small lowland streams with moderate flow including widespread *Apium nodiflorum* and *Berula erecta* and some *Veronica anagalis-aquatica* and *Veronica beccabunga*. This assessment also identified the river as having 'poor ecological quality' with a Q-value of Q3 according to the Q-value scheme as defined by the EPA. Refer to Appendix C for further details.

Figure 4-4: Habitat Map



4.2.2 Fauna

Amphibians

The NBDC holds records of common frog within 2km of the Site (NBDC, 2021).

During the Site walkover, no observation of common frog spawn (*Rana temporaria*) or smooth newt (*Triturus vulgaris*) were made within the Site. In addition, given the steady flow within the Baldonnell Stream, which runs through the central portion of the Site, it is not considered that this waterbody is suitable for amphibians.

Furthermore, the drainage ditches onsite were predominately dry at the time of survey and therefore, it is not considered that these habitats would support breeding amphibians.

No additional surveys were considered necessary, and it is not considered that amphibians will utilise the Site.

Badger

The NBDC does hold one record of badger within 2km of the Site (NBDC, 2022). Mammal tracks were identified onsite, however, 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 due to high levels of human activity.

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 within the past 10 years (NBDC, 2022).

The initial Site walkover identified a couple of mature trees within the hedgerow/treeline to the east of the Site that contain suitable crevices, loose bark and ivy growth for roosting bats. However, the targeted bat surveys did not identify any roosting activity onsite, only low levels of foraging and commuting bat activity.

Full details of the bat surveys and results are provided in Appendix B.

Birds

The areas of scrub and hedgerows/treelines have the potential to provide suitable nesting sites for a range of bird species.

The NBDC holds records of multiple amber and red list species within 2km of the Site (NBDC, 2022). During the initial Site walkover, no notable species were identified; however, a buzzard (*Buteo buteo*) and lapwing (*Vanellus vanellus*) have previously been observed onsite.

It should be noted that the habitats present are not considered suitable for any of the bird species designated for the South Dublin Bay and River Tolka Estuary.

Otter

The NBDC do not hold any records for otter within 2km of the Site over the last 10 years (NBDC, 2022). During the Site walkover, no evidence of otter was identified, and the Site is considered to be of limited value for this species.

However, there is a hydrological link between the Site and watercourses further down the catchment which potentially support otter. In addition, there are waterbodies within the golf course. However, there is limited connectivity for otters to waterbodies within the wider area due to the watercourses being culvert as they pass through urban / developed areas.

Aquatic Species

According to the NBDC White-clawed crayfish (*Austropotamobius pallipes*) have been recorded within 2km of the Site (NBDC, 2022). However, these recordings are from waterbodies unrelated to the Site and therefore, this species is not considered relevant to this project. The aquatic survey carried out by Sweeney Consultancy, attached as Appendix C, did not identify any notable or protected species within the Baldonnell Stream and this report noted that the current artificial channel was 'poorly created from an ecological perspective.'

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 such as Eurasian pygmy shrews (*Sorex minutus*), red squirrels (*Sciurus vulgaris*) and hedgehog (NBDC, 2022).

Hedgehogs and pygmy shrews are common and widespread species that typically occur in scrub, woodland and rank grassland habitats. Therefore, the majority of onsite habitats are not considered suitable for these species given the recolonising vegetation / bare ground and spoil. In addition, no evidence of these species was identified onsite. However, the hedgerow / treeline bounding the Site has the potential to support foraging and commuting hedgehogs and pygmy shrews.

In relation to red squirrels, the habitat walkover did not identify any evidence of red squirrels in the form of dreys and cone cores. It is not considered that red squirrels will utilise the Site due to their preference for coniferous woodlands and medium-large concentrations of trees. Although the broadleaved hedgerow / treeline along the eastern boundary of the Site is mature, as this is a linear habitat, it is not considered large or dense enough for a population of red squirrels to establish.

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 Receptor	Biodiversity	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 SDCCP (SDCC, 2016). 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 EclA.
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 three (3No.) pNHAs. These sites were included in this assessment in-line with objective HCL13 of the SDCCP (SDCC, 2016). 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				
Amenity (GA2)	Grassland	N/A	Low/No local value	This habitat is commonplace throughout Ireland, and as a monoculture, is of very little ecological significance. Therefore, any disturbance caused by the proposed development will be of little consequence. This habitat has been scoped out from further consideration.
Recolonising Bare Ground (ED3) / Spoil and Bare Ground (ED2)	Bare Ground	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 Receptor	Biodiversity	Relevant Legislation	Valuation	Scoping Result and Justification
Improved Grassland (GA1)	N/A		Low Local Value	This is a common habitat type throughout Ireland and provides limited ecological value. This habitat is not of significant conservation value and its loss is not considered to be significant. This habitat has been scoped out from further consideration.
Scrub (WS1)	N/A		Low Local Value	This is a common habitat type throughout Ireland and is not of significant conservation value. The areas of scrub onsite will be completely removed as a result of the proposed development. As these areas have the potential to support ground nesting birds, restrictions will apply in relation to the time of year in which vegetation can be cut (see Nesting Birds below) and more consideration will have to be given to these species. However, as these mitigation measures are species related, 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 11 and 13, G6 Objective 1 and HCL15 Objective 3 of the SDCDP (SDCC, 2016), refer to Section 5.2.1.5 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. As the proposed development involves the rerouting of the Baldonnell Stream into the eastern drainage ditch, mitigation measures will be put in place to avoid potential pollutants reaching the stream through the drainage ditch. The vegetation currently within and along the current drainage ditch network will be retained and protected where possible and a 10m landscaping buffer will be implemented / maintained to prevent any impacts to the current drainage ditch and future watercourse route in-line with objectives IE2 Objective 9, G2 Objective 13, G3 Objective 2, G3 Objective 5 and G6 Objective 1 of the SDCDP (SDCC, 2016). Therefore, this receptor has been scoped in for further consideration.

Potential Receptor	Biodiversity	Relevant Legislation	Valuation	Scoping Result and Justification
Baldonnell Stream		Water Framework Directive (2000/60/EC)	Low Local Value	<p>Biological assessments carried out on the Baldonnell Stream concluded that this waterbody is currently of little ecological value. This is due to the artificial V-shaped channel utilised when rerouting the stream from its original course. The assessment concluded that the proposed in-river works could improve the ecological value of this stream due to the existing treeline and hedgerow along the proposed route providing 'mixed shade and allochthonous inputs' and the opportunities to create varied flow. For further details refer to the Biological Assessment Report attached as Appendix C.</p> <p>Given the potential benefit to this habitat from the proposed works, this receptor has been scoped out from further consideration.</p>
Flora and Fauna				
Flora		N/A	N/A	<p>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.</p> <p>Therefore, this receptor has been scoped out from further consideration.</p>
Bats		Wildlife Act 2000 (as amended) EU Habitats Directive Annex IV	Low Local Value	<p>All trees with bat roost potential were surveyed and found to have an absence of roosting bats. There are no buildings within the Site. The bat activity onsite consisted of commuting and foraging bats along the hedgerow / treeline along the eastern border of the Site which will remain untouched and protected throughout the lifetime of this development. A large area of the Site is illuminated at night due to adjacent street / security lighting, and no bats were recorded to be commuting or foraging within these illuminated areas of the Site.</p> <p>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 SDCCP (SDCC, 2016) (see Section 5.2.2). In addition, noise mitigation measures have been included to reduce potential noise impacts on nocturnal species including bats.</p> <p>Therefore, taking a precautionary approach, this receptor has been scoped in for further consideration and mitigation measures are outlined below.</p>
Badgers		Wildlife Act 2000 (as amended)	Low Local Value	<p>No signs of badger activity were noted during the field survey and the Site is not considered to be of significant value for badger.</p> <p>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.</p> <p>Therefore, taking a precautionary approach, this receptor has been scoped in for further consideration and mitigation measures are outlined below (Section 5.2.1.6).</p>

Potential Receptor	Biodiversity	Relevant Legislation	Valuation	Scoping Result and Justification
Otter		Wildlife Act 2000 (as amended)	Low Local Value	<p>No signs of otter were noted during the field survey within the drainage ditches or the Baldonnell Stream.</p> <p>However, given the connectivity of the Baldonnell Stream to the River Grifeen and eventually the Liffey, there is potential that otter utilising the surrounding river network will be adversely affected during the construction / operational phase of the proposed development without appropriate mitigation measures.</p> <p>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 further downstream in the wider river network.</p> <p>Taking a precautionary approach, this receptor has been scoped in for further consideration and mitigation measures are outlined below.</p>
Birds		<u>Nesting Birds</u> Wildlife Act 2000 (as amended)	High Local Value	<p>The areas of scrub onsite and hedgerow / tree-lines bordering the Site provide suitable foraging and nesting habitat for a range of common bird species. The hedgerows / tree-lines onsite which provide nesting potential will be protected, however the areas of scrub onsite will be removed as part of the proposed works.</p> <p>In order to avoid impacts on these species, all vegetation clearance required as part of the works will be scheduled to take place outside of the nesting bird season (typically considered to be between 1st March to 31st August – weather dependant). Birds may be subject to some temporary disturbance during construction; however, this is not considered likely to be significant.</p>
Amphibians		Wildlife Act 2000 (as amended) EU Habitats Directive Annex V	Low Local Value	<p>No waterbodies suitable for amphibians were identified within the Site boundary. However, if any amphibians are discovered onsite during the construction works, all works within the affected area will cease and the project ECOW will be consulted.</p> <p>This receptor has been scoped out from further consideration.</p>
Other fauna		N/A	N/A	<p>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 / pygmy shrews in the area alongside common species such as the fox, irish hare or European rabbit (Section 5.2.1.6). Water protection measures will also protect any potential aquatic species present in the Baldonnell Stream, Grifeen River and River Liffey (Section 5.2.1.1 and 5.2.2.1).</p>
Invasive Species		N/A	N/A	<p>No invasive species were noted on the Site during the field surveys.</p> <p>However, measures will be implemented in order to ensure no invasive species are introduced to the Site during the construction phase (see Section 5.2.1.6). This is in compliance with G2 Objective 12 and 13 of the SDCDP (SDCC, 2016).</p>

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 3.5.

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 EclA 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 EclA 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, EclA and NIS. Everybody working onsite must understand the role and authority of the ECoW.

5.2.1.1 Protection of Water Quality during Construction

As the proposed development requires the rerouting of Baldonnell Stream, there is a risk that during this process that 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 (SDCC, 2016).

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 / fences will be installed as required under the direction of the ECoW;
- 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.

The following best practice guidelines will be followed, which are based on Inland Fisheries Ireland (IFI, 2016) and National Roads Authority (NRA, 2005) 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 Watercourse Diversion and Construction of Attenuation Pond

As the Baldonnell Stream's connects into a wider river network, the watercourse diversion will be designed in order to maintain and enhance connectivity for foraging and commuting species along the river system.

The following design and mitigation measures will be implemented throughout the in-river works / watercourse diversion works to prevent any adverse impact to species within the wider river system:

- The construction of the new channel / reprofiling works must be carried out as far as possible in advance of the actual diversion of flow, and ideally bankside vegetation of native streamside tree and bush species should be well established;
- The construction of the pond, headwalls and associated works will be completed in advance of the stream connection to the new channel;
- The new channel should be constructed as a two-stage channel comprised of a stepped profile, and should be gently profiled to minimise the risk of erosion with the channel bottom formed of coarse non eroding material i.e., rocks, cobble & gravel;
- The new channel should contain occasional boulders to create variations in flow type;
- The new channel should ensure connectivity for commuting and foraging species;
- The new channel should be constructed in such a way as to minimise suspended solids released when the river is re-routed. The use of loose fine-grained materials in the new channel construction should be strictly limited;
- Earth moving works and construction activities should be avoided in the area within 10m of the bank of the Baldonnell Stream, with exception to the area where the realigned channel joins with the existing river channel. However, this area should be fenced off prior to the commencement of works;
- Where practicable, existing vegetation along the drainage ditch into which the Baldonnell Stream will be rerouted should be retained and supplemented / managed as required to maintain sheltered commuting routes and connectivity along the river corridor and to the wider landscape;

- Landscaping measures will be implemented to ensure that the watercourse continues as a contiguous natural habitat for a range of species, with new sections of riparian habitat to be created as part of the works being planted with semi-mature trees;
- The Contractor appointed shall ensure that all personnel working onsite are trained in pollution incident control response; and,
- The Contractor or Ecologist shall establish contact with Inland Fisheries Ireland (IFI) before works commence and as per consultation, all works will be carried out with an approved design and method statement.

A suitably qualified Ecologist must be present on-site when the watercourse is initially diverted and to ensure that the measures detailed above have been adhered to.

Furthermore, as per the NRA Guidelines, quarterly monitoring for a period of one (1No) year following completion of the works should be undertaken to ensure that the mitigation measure have been effective.

5.2.1.3 Ecological Clerk of Works (ECoW)

An Ecological Clerk of Works (ECoW) will inspect the Site in advance of works commencing, and will undertake Site inspections as required during the works to ensure that the works will be completed in line with the mitigation measures stipulated within the CEMP, including:

- Inspection and monitoring of all watercourse sections along or in close proximity to the proposed works;
- Inspection of all surface water treatment measures; and,
- Monitoring of stockpiles within close proximity to the watercourse.

Where the ECoW has carried out an investigation of a release of sediment to a watercourse causing a plume, the following procedure shall be followed:

- The relevant NPWS and IFI staff shall be notified immediately;
- The discharge generating the sediment discharge shall be stopped immediately;
- The contractor will be required to take immediate action and to implement measures to ensure that such discharges do not re-occur;
- Works shall not recommence until appropriate corrective measures to avoid any repetition are put in place. Such measures shall be agreed with the ECoW following consultation with the NPWS and IFI and shall be in accordance with the requirements of these control measures; and,
- Where the ECoW considers that the risk of a sediment release is high, the contractor will be informed, and protective action will be undertaken. Where the contractor does not take immediate action the ECoW shall instruct the contractor to take action and the same shall be reported to the Contract Manager and the Client.

The ECoW will also be responsible for carrying out regular audits of the Contractors CEMP and will be the primary person involved in the developers monitoring role. In addition, the ECoW will be delegated sufficient powers so that he / she will be authorised to instruct the contractor to stop works and to direct the carrying out of emergency mitigation / clean-up operations. In addition, the ECoW will maintain a register indicating whether all mitigation measures have been carried out satisfactorily.

5.2.1.4 Earthworks

As the proposed development will involve the removal of existing stockpiles and the excavation of material, the following mitigation measures will be implemented to avoid the

generation of dust or dirt and limit the potential of these suspended solids to enter the onsite watercourses:

- Earth movements and soil stripping operations will not be carried out during dry and windy weather without suitable mitigation measures;
- Stockpiles, tips and mounds will be constructed in such way to minimise dust creation; and,
- Water bowsers, sprays and mists will be used to suppress dust arising from stockpiles, and screening activities, during dry weather as required;
- Within the construction area, the ground to be stripped of existing cover / vegetation will be kept to the absolute minimum required for the works; and,
- All excavated material or existing stockpiles onsite for disposal will be removed to a suitably licensed facility offsite.

5.2.1.5 Protection for Hedgerows / Treelines

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 (SDCC, 2016). 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 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 (SDCC, 2016) (see Appendix D – Landscape Plan). The plantings will comprise a mix of native woody shrubs and trees, including fruit-bearing species, which will provide cover and potential foraging opportunities for wildlife.

5.2.1.6 Protection of Species

Birds

In order to ensure no impacts, occur to birds as a result of the proposed development, the following mitigation measures will be put in place:

- Any vegetation clearance required will take place outside of the nesting bird season (1st March to 31st August), as per Section 40 of the Wildlife Act 1976, as amended by Section 46 of the Wildlife (Amendment) Act 2000;
- In the event that works need to be undertaken within the main breeding season, this would be undertaken in consultation with NPWS;
- Prior to the vegetation removal the ECoW will inspect the Site and the project ECoW will inspect the Site during the vegetation removal works; and,
- Should birds nest within the active working area during the construction phase, works within the area will stop within the area and the project ECoW will be consulted.

Following the implementation of the above-mentioned mitigation measures it is considered unlikely that birds will be significantly impacted as a result of the proposed development. It should be noted that birds may be subject to some temporary minor disturbances during construction. However, due to the fact that birds are a highly mobile species, should any birds be impacted, these birds will move away from the disturbance to a more suitable area, therefore, this is not considered likely to be significant.

Badgers / Terrestrial Mammals

Given that the NBDC holds records of badgers within 2km of the Site and other terrestrial mammals are known to occur within the wider area and may inadvertently enter the Site, in order 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 (SDCC, 2016) 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 (SDCC, 2016):

- 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.

5.2.1.7 Noise Mitigation Measures

Construction noise can impact on various species through disturbance, behavioural impacts, stress and displacement from feeding grounds. Therefore, noise mitigation measures will be implemented during the construction phase of the proposed development. This will ensure that there will be no adverse effects on nocturnal species utilising the Site and wider landscape. These measures are in line with the recommendations of BS 5228: Part 1 (2014) and the European Communities (Noise Emission by Equipment for Use Outdoors) Regulations, 2001, they include the following:

- Only plant with the lowest noise ratings will be selected and its location will be based on the least impact in terms of noise;
- Plant will only be left running during works and will be switched off at all other times. Plant will not be left idling; and,
- All construction related works, aside from emergencies will be carried out during normal working hours, as outlined in Section 3.5.

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 species 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 petrol interceptors, swales, porous paving, attenuation tanks and hydrobrakes, as described in Section 3.4.5.1, it is not considered that the proposed development will have any adverse effect on water quality within the Baldonnell Stream, Griffeen 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 and Irish Water infrastructure as described in Section 3.4.5.2. No alterations to this approved system are proposed.

It should also be noted that the diversion of the Baldonnell Stream and the associated drainage system design will have slight positive impacts on the quality and quantity of water onsite.

As mentioned in Section 3.4.3, 859,248 litres of fuel will be stored onsite to be used if the gas power supply is compromised. This fuel will be stored in 'belly tanks' and will be integrally banded with leak detection systems that conform to Irish regulations. 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.

5.2.2.2 Measures for the Protection of Nocturnal Species

Nocturnal mammals are impacted by lighting. Therefore, it is important that lighting installed within the Site is 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) and, IE7 Objective 5 and G4 Objective 4 of the SDCDP (SDCC, 2016). The lighting strategy involves avoiding excessive lighting. The following measures have been taken into consideration during the lighting layout design:

- 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;
- Lighting lux levels will not exceed 1.0 Lux along most of the diverted Baldonnell stream and the attenuation pond; and,
- Lighting will be turned down / off when not required.

Following the installation of the lighting for the proposed development, the project ECoW will undertake a further Site inspection in order to check the lighting patterns and lux levels along the Site boundaries.

5.2.2.3 Measures for Noise during the Operational Phase

The following noise mitigation measures have been incorporated into the proposed development design to ensure that any elevated noise levels onsite are reduced as far as practicably possible:

- Gas turbine generators will be attenuated to achieve a maximum sound pressure level at 1m from any point of the generator of 65dBA;

- Diesel generators will be attenuated to achieve a maximum sound pressure level at 1m from any point of the generator of 75dBA;
- Dry air chillers will be attenuated to achieve a maximum sound pressure level at 1m from any point of the chiller of 55dBA;
- Condensers and AHUs will be attenuated to achieve a maximum sound pressure level at 1m from any point of 70dBA;
- A minimum 9m high solid noise wall will be constructed around all diesel generator yards, with louves;
- A minimum of 4m high solid noise parapet will be constructed on the main data centre buildings to shield receptors from chiller noise; and,
- In addition, the standby generators will only be tested one at a time, during daylight hours and for a maximum of one hour, once a month. This will ensure that any nocturnal or crepuscular species in the area are not affected during their peak times of activity.

The Noise Assessment carried out for the proposed development states that noise levels will comply with noise limits at the adjoining golf course and at residential receptors during normal operation and during emergency procedures. Therefore, it is not considered likely that noise will affect species potentially utilising these areas surrounding the Site.

It should be noted that the character of the noise onsite will be constant, with no tonal or impulsive qualities and that urban areas regularly experience noise between 40-60dBA, which is often exceeded near road infrastructure. Therefore, it is considered that any species utilising the wider landscape will be habituated to a high level of noise.

In addition, the proposed weekly generator tests will take place during daylight hours and therefore will not affect any nocturnal species.

5.3 Ecological Enhancement Measures

5.3.1 Stream Diversion

According to the Biological Assessment of Baldonnell Stream, diverting the watercourse could have significant positive effects on the aquatic and riparian habitats and species in the area. A stepped bank and occasional boulders in the stream will allow for varied flow and subsequently create a variety of habitats for aquatic invertebrates. As part of the landscape plan, wetland trees will be placed around this water feature and a 10m riparian strip will be maintained from the top of the bank to all buildings. The widening of the northern section of the stream will require minimal construction works (which will take place offline). It should be noted that the current condition of the Baldonnell Stream is not of great quality for biodiversity and this proposed route is within 100m of the existing channel. The area around the stream will be planted with riparian vegetation, however, in terms of in-stream vegetation and freshwater ecology, natural colonisation of wildlife will occur overtime from the upstream and downstream habitats – this is considered to be an appropriate method of colonisation rather than introducing new species / and interfering with natural processes. IFI have confirmed that they are satisfied with the approach of achieving ecological maturity through natural colonisation. The diversion of the stream meets G3 Objective 4 and G6 Objective 2 of the SDCDP (SDCC, 2016).

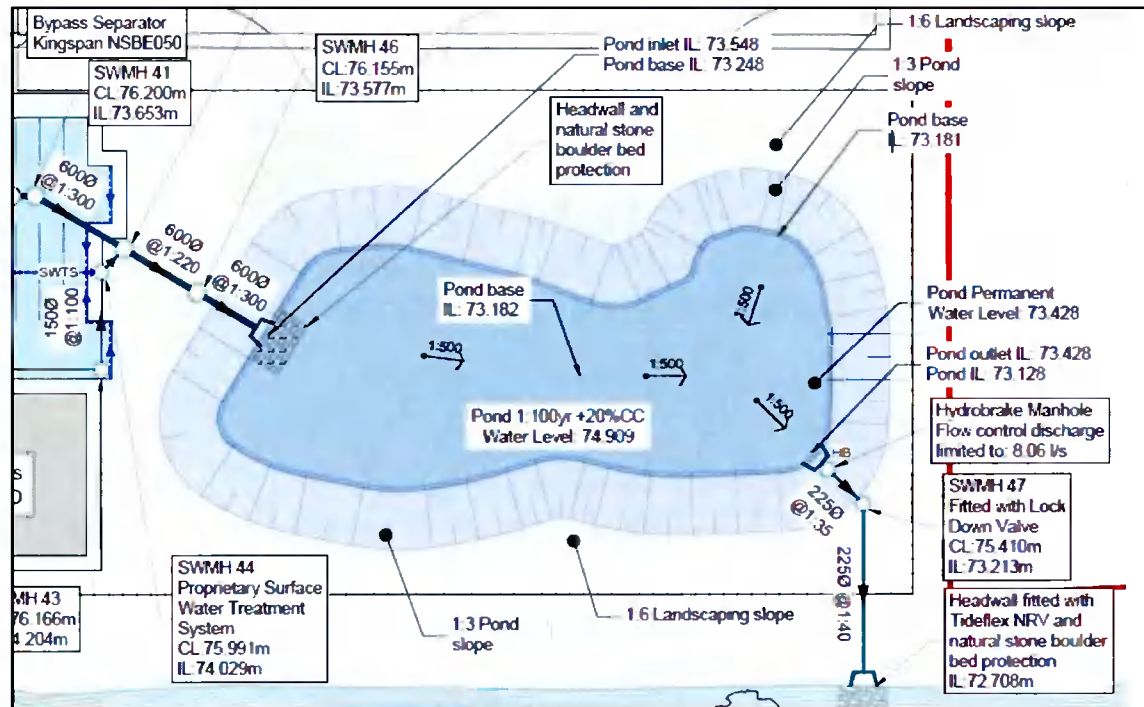
5.3.2 Attenuation Pond

A new attenuation pond will be created to hold surface water runoff from the proposed development. This freshwater habitat has been designed with a permanent pool and sloping banks to allow for higher water levels whilst also providing shallow areas to foster a variety of wildlife. Surface water runoff from the Site will pass through a headwall and natural stone

boulder bed protection prior to reaching the permanent pool. The attenuation pond will be connected to the Baldonnell stream; however, surface water will pass through a hydrobrake, headwall and natural stone boulder bed protection prior to reaching the watercourse. The outlet to the stream will be fitted with a lock down valve for emergency use.

The immediate area surrounding the attenuation pond is characterised by a gentle slope and will be planted with marsh vegetation, refer to Section 5.3.2.1 below.

Figure 5-1: Design of Attenuation Pond



Furthermore, the placement of hibernacula and habitat piles (See Section 5.3.5) around the margins of the freshwater pond will create refuge for invertebrates and amphibians, which in turn will enhance the Site for other protected / notable species.

5.3.2.1 Wetland Habitat

Planting of marsh / aquatic vegetation along the margins of the diverted Baldonnell Stream and the attenuation 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 D, has included for the planting of marsh marigold (*Catha palustris*), yellow flag iris (*Iris pseudacorus*), flowering rush (*Butomus umbellatus*), bog bean (*Menyanthes trifoliata*), marsh cinquefoil (*Potentilla palustris*), water mint (*Mentha aquatica*) and arrowhead (*Sagittaria sagottifolia*) within and along the banks of the stream and attenuation pond alongside suitable riparian vegetation i.e., sedges, ferns, rush and grass species adjacent to the stream.

The landscape plan also includes for the planting of oxygenating and deep-water vegetation within the attenuation pond. These plants include curled pondweed (*Potamogeton crispus*), lesser pondweed (*Potamogeton perfoliatus*), brandy bottle (*Nuphar lutea*) and white water lily (*Nymphaea alba*).

5.3.3 Landscape Planting

The hedgerow / treeline bordering the Site will be maintained and protected during the construction and operational phase of the proposed development. In addition, enhancement

plantings will be implemented along the banks of the rerouted stream to strengthen this linear habitat and provide more screening for the Grange Castle Golf Club and planted in pockets along the southern boundary of the Site as part of the 10m landscape buffer from the Baldonnell Stream.

All hedgerow / treeline 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 provenance 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 as features within the landscaped area of the Site and along the access track, however, along the eastern and southern boundaries of the Site, only native species will be introduced.

Table 5-2: Hedgerow / Tree Planting Mix Onsite

Type of Planting	Common Name	Scientific Name
Woodland / Treeline Planting	Birch	<i>Betula pendula</i>
	Oak	<i>Quercus rober</i>
	Bird Cherry	<i>Prunus padus</i>
	Field Maple	<i>Acer campestre</i>
Hedgerow Mix	Blackthorn	<i>Prunus spinosa</i>
	Holly	<i>Ilex aquifolium</i>
	Hawthorn	<i>Crataegus monogyna</i>
Boundary Wetland Trees	Black Alder	<i>Alnus glutinosa</i>
	Goat Willow	<i>Salix caprea</i>
Street Trees	Turkish Hazel	<i>Corylus columa</i>
	Field Maple	<i>Acer campestre</i>
	Small Leaved Lime	<i>Tilia cordata greenspire</i>
Ornamental trees	Cherry Blossom	<i>Prunus spp.</i>
	Japanese Maple	<i>Acer Palmatum</i>
	Evergreen Magnolia	<i>Magnolia grandiflora</i>
	Crab Apple	<i>Malus spp.</i>

5.3.4 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 areas of bee friendly and hare resistant native wildflower mixed will be introduced onsite. All wildflower planting will consist of a mixture of native species, see Table 5-3 and Figure 5-2 for examples of wildflower habitats and a potential native planting mix.

It should be noted that surrounding the designated wildflower areas, an unmown natural grassland will be present.

Figure 5-2: Wildflower Meadow Habitats

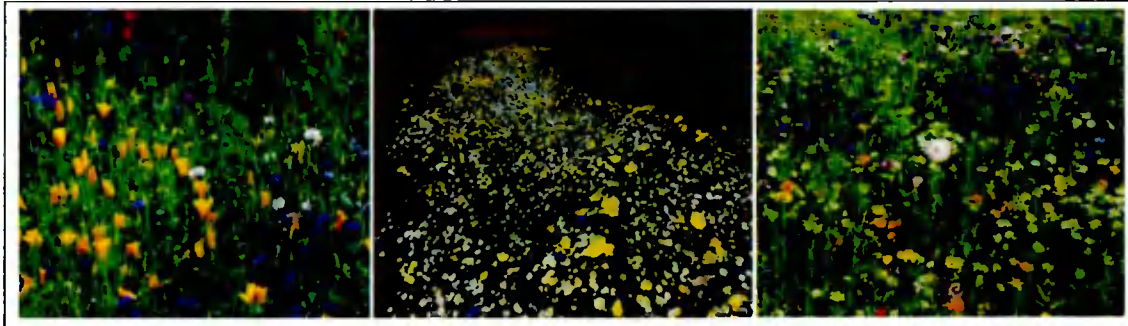


Table 5-3: Example of a 100% Native Wildflower Meadow Seed Mixture General Purpose

Common Name	Scientific Name	Percentage Mix (%)
Birdsfoot Trefoil	<i>Lotus Corniculatus</i>	2.5%
Common Cat's Ear	<i>Hypochaeris Radicata</i>	1.0%
Corn Poppy	<i>papaver Rhoetas</i>	2.5%
Cowslip	<i>Primula Veris</i>	0.2%
Field Scabious	<i>Knautia Arvensis</i>	2.5%
Lady's Bedstraw	<i>Galium Verum</i>	7.5%
Lesser Knapweed	<i>Centaurea Nigra</i>	7.5%
Meadow Buttercup	<i>Ranunculus Acris</i>	7.5%
Meadow Vetchling	<i>Lathyrus pratensis</i>	1.0%
Musk Mallow	<i>Malva Moschata</i>	7.5%,
Ox Eye Daisy	<i>Leucanthemum Vulgare</i>	2.0%,
Ragged Robin	<i>Lychnis Flos Cuculi</i>	0.2%,
Red Campion	<i>Silene Dioica</i>	7.5%,
Ribwort Plantain	<i>Planatago Lanceolata</i>	7.5%
Rough Hawkbit	<i>Leontodon hispidus</i>	0.5%,
Salad Burnet	<i>Sanguisorba Minor</i>	7.5%,
Self-Heal	<i>Prunella Vulgaris</i>	7.5%,

Common Name	Scientific Name	Percentage Mix (%)
Small Scabious	<i>Scabiosa columbaria</i>	0.5%,
Common Sorrel	<i>Rumex Acetosa</i>	2.5%,
White Campion	<i>Silene Alba</i>	7.0%,
Wild Carrot	<i>Daucus carota</i>	5.0%,
Upright Hedge Parsley	<i>Torilis Japonica</i>	2.5%
Yarrow	<i>Achillea millefolium</i>	2.5%
Yellow Rattle	<i>Rhinanathus Minor</i>	5.0%
Wild Clary	<i>Salvia Verbenaca</i>	2.5%

5.3.5 Hibernacula and Habitat Piles

Artificial hibernacula or habitat piles will be installed around the Baldonnell Stream and 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 5-3 and 5-4.

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 5-3: Typical hibernaculum and cross section

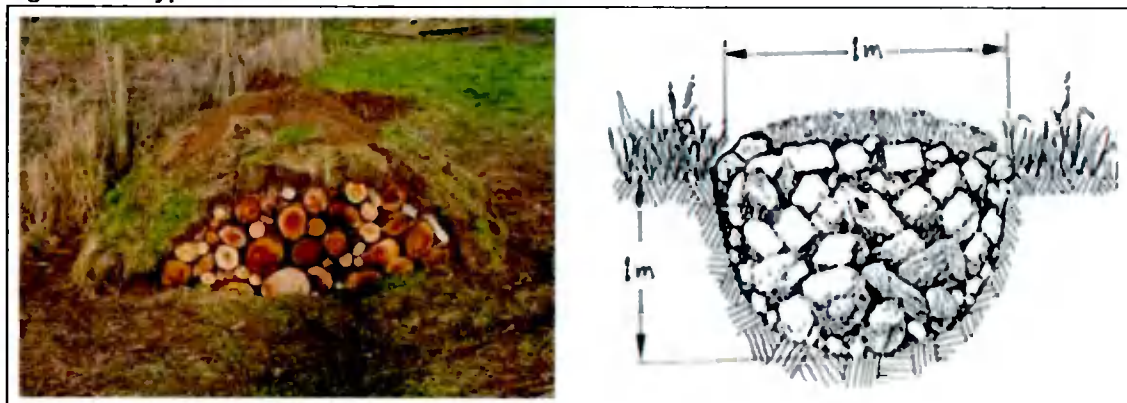


Figure 5-4: Habitat Piles



5.3.6 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 5-4: Native Green Roof Seed Mix

Common Name	Scientific Name
Common bent grass	<i>Agrostis capillaris</i>
Burnet saxifrage	<i>Pimpinella saxifrage</i>
Centaury	<i>Centaureum erythraea</i>
Wild chamomile	<i>Chamaemelum nobile</i>
Corn pansy	<i>Viola spp.</i>
Cowslip	<i>Primula veris</i>
Eyebright	<i>Euphrasia spp.</i>
Lady's bedstraw	<i>Galium verum</i>
Ox-eye daisy	<i>Leucanthemum vulgare</i>
Red bartsia	<i>Odontites serotina</i>
Yellow rattle	<i>Rhinanthus minor</i>

Common Name	Scientific Name
Selfheal	<i>Prunella vulgaris</i>
Sheep's bit scabious	<i>Jasione montana</i>
White stonecrop	<i>Sedum album</i>
Blackstonia	<i>Blackstonia perfoliata</i>
Fairy foxglove	<i>Erinus alpinus</i>
Sea campion	<i>Silene uniflora</i>
Ivy leaved toadflax	<i>Cymbalaria muralis</i>
Quaking grass	<i>Briza media</i>
Wall pennywort	<i>Umbilicus rupestris</i>
Storksbill	<i>Erodium cicutarium</i>
Thyme (wild)	<i>Thymus polytrichus</i>
Sweet violet	<i>Viola odorata</i>
Dog violet	<i>Viola riviniana</i>
Keeled garlic	<i>Allium carinatum</i>
Harebell	<i>Campanula rotundifolia</i>
Cat's ear	<i>Hypochaeris radicata</i>
Corn spurry	<i>Spergula arvensis</i>
Fairy flax	<i>Linum catharticum</i>
Lesser yellow clover	<i>Trifolium dubium</i>

Trellis walls and planting beds will also be introduced onsite. These beds will be planted with Russian vine (*Fallopia baldschuanica*), a fast-growing, non-native, ornamental vine. The planting bed will be contained and form part of the managed landscape. Although a non-native species, Russian vine is not currently listed under S.I. 477/2011.

Russian vine is a flowering plant that provides a source of nectar / pollen for pollinators.

6 CONCLUSIONS

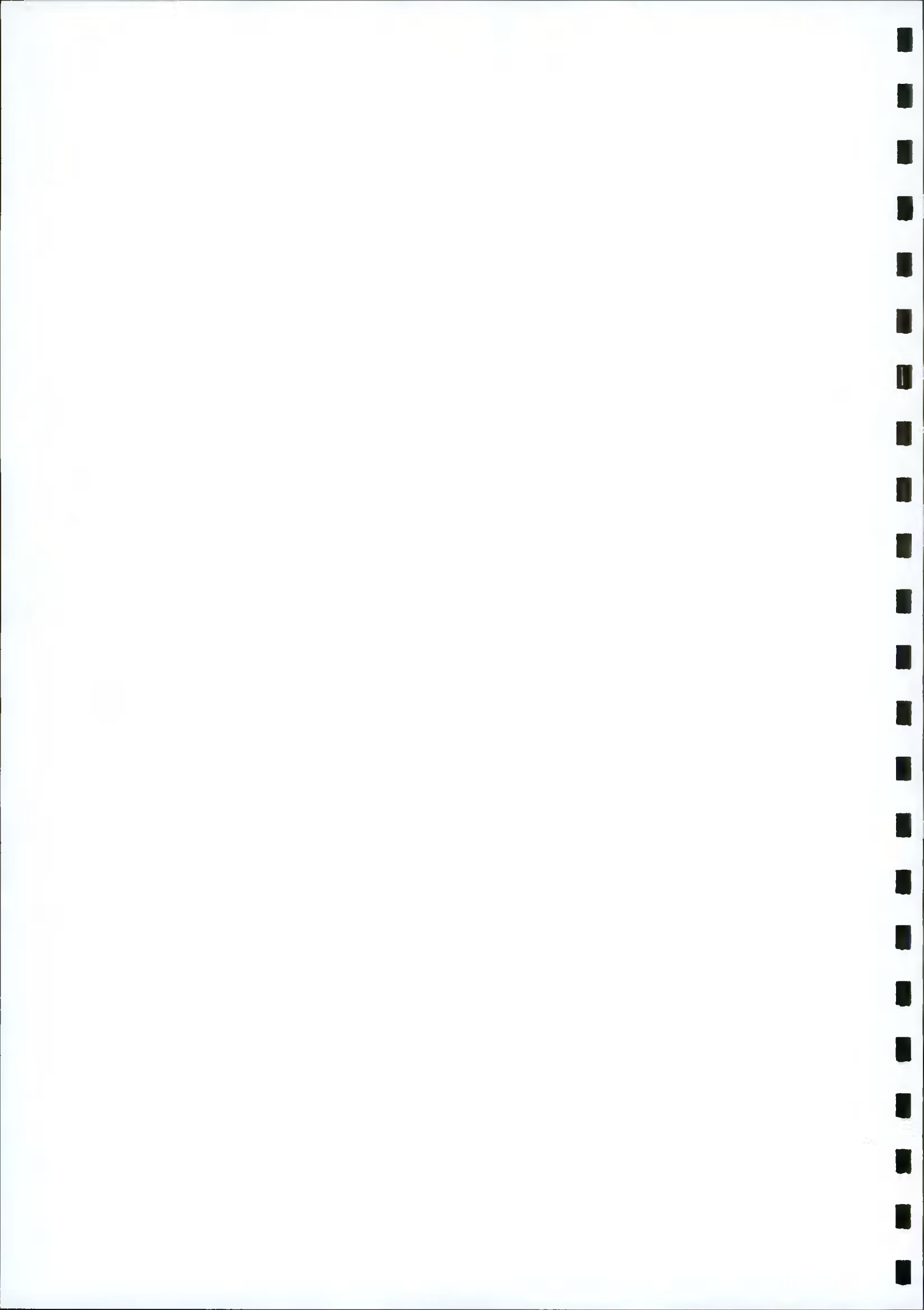
Based on the findings of a detailed desk-based study, a review of all the ecological information available for the Site and wider area and a field survey by MOR Ecologists, it is considered reasonable to conclude the following:

- The Site itself is currently of low local ecological value;
- The Site is located in an area predominantly made up of improved agricultural grassland, recolonising species and spoil and 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 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;
- The re-routing of the Baldonnell Stream has the potential to significantly improve the health of the watercourse and subsequently biodiversity in the area; and,
- The proposed attenuation pond, additional landscaping and protected species enhancement measures will supplement the existing treelines onsite in the longer term and provide additional habitats for species already existing within the area.

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APPENDICES





APPENDIX A

