Site R, Jordanstown Road, Aerodrome Business Park, Rathcoole, Co. Dublin

Ecological Impact Assessment (FINAL)

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Exeter Ireland Property IV C Limited

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Contract

This report describes work commissioned by Kavanagh Burke, on behalf of Exeter Ireland Property IV C Limited, by an email dated 12-01-2021. Patricia Byrne, Mark Desmond and Malin Lundberg of JBA Consulting carried out this work.

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Purpose

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Abbreviations

AA	Appropriate Assessment
CIEEM	Chartered Institute of Ecology and Environmental Management
DoEHLG	Department of Environment, Heritage and Local Government
EC	European Communities
EcIA	Ecological Impact Assessment
EIA	Environmental Impact Assessment
EPA	Environmental Protection Agency
ERBD	Eastern River Basin District
EU	European Union
NBDC	National Biodiversity Data Centre
NHA	Natural Heritage Area
NPWS	National Parks and Wildlife Service
PRF	Potential Roost Feature
pNHA	proposed Natural Heritage Area
RBMP	River Basin Management Plan
SAC	Special Area of Conservation
SDCC	South Dublin County Council
SPA	Special Protection Area
TON	Total Oxidised Nitrogen
WFD	Water Framework Directive
ZOI	Zone of Influence

1 Introduction

JBA Consulting Ireland Ltd. has been commissioned by Exeter Ireland Property IV C Limited to undertake an Ecological Impact Assessment (EcIA) in relation to a proposed development east of Aerodrome Business Park, Rathcoole, Co Dublin. The development will include the construction of 1 No. warehouse with ancillary office and staff facilities and associated development.

1.1 Aims

The aims of this EcIA are to:

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

1 2 The Existing Site

The proposed development will be located east of the Aerodrome Business Park in a plot currently used as arable land for crop growth (Figure 1-1). The site is accessed from the R120 via a corridor between the Aerodrome Business Park and farmland to the south east. Casement Aerodrome is located 750m north east of the site. The site is located approximately 1 km north of Rathcoole, Co. Dublin

Baldonnel Stream and River Griffeen are located approximately 320m and 655m respectively to the west and River Camac is approximately 720m to the east.

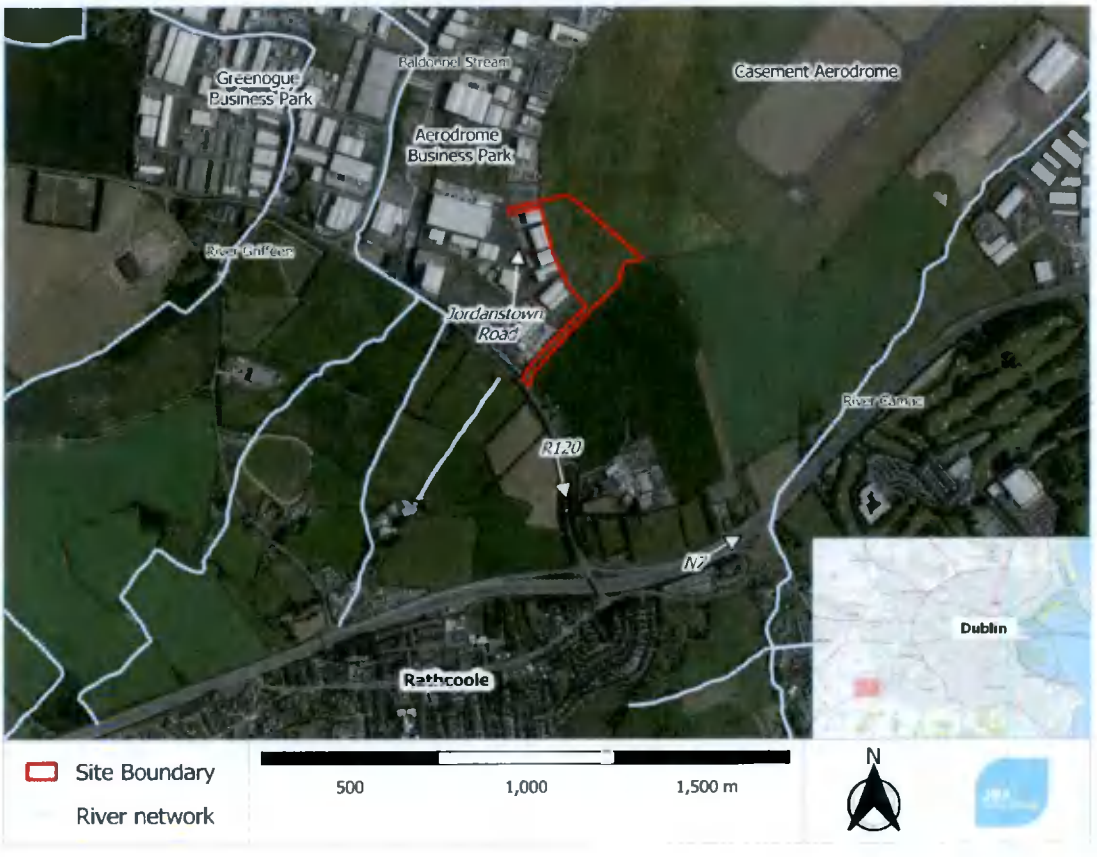


Figure 1-1: Site Location

2 Project Description

2.1 The 'Project'

Exeter Ireland Property IV C Limited intend to apply for permission for development at this 5.69 ha site at known as Block R, Jordanstown Road, Aerodrome Business Park, Rathcoole, Co. Dublin. Block R, Jordanstown Road, Aerodrome Business Park, Rathcoole, Co. Dublin. The lands are bounded to the east by Blocks A - D Jordanstown Road, Aerodrome Business Park, Rathcoole, Co. Dublin and to the north, south and west by greenfield lands. The R120 Newcastle Village to Rathcoole Road also bounds the site to the south.

The development will comprise the construction of 1 No. warehouse with ancillary office and staff facilities and associated development. The warehouse will have a maximum height of 15 metres with a gross floor area of 22,020 sq m including a warehouse area (20,167sq m), ancillary office areas (1,163 sq m) and staff facilities (690 sq m).

The development will also include: the provision of a new vehicular access to the site from Jordanstown Road including 2 No. additional access gates from this new road to the existing Site E to the north; pedestrian access; 146 No. ancillary car parking spaces; 36 bicycle parking; HGV yards; level access goods doors; dock levellers; access gates; hard and soft landscaping; lighting; boundary treatments; ESB substation; plant; pedestrian access gate at the southern portion of the site from the R120; and all associated site development works above and below ground.

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

2.1.1 Site Drainage

Surface water will be attenuated on site with Stormtech Attenuation System or equivalent with a proposed storage volume of 3,985m^3. The restricted discharge from the site will be limited by a proprietary flow control device. The surface water will pass through a silt trap and petrol interceptor prior to entering the attenuation facility. SUDS are incorporated, including tree pits, rain water harvesting, porous asphalt, trapped road gullies, water butts and permeable paving. The surface water will discharge to the existing surface water sewer at Jordanstown Road by the proposed vehicular entrance and ultimately to Griffin River in the business park.

Foul water will be collected in a proposed foul sewer within the site along the western side of the warehouse which will be connected to the existing foul sewer at Jordanstown Road by the proposed vehicular entrance. The total number of discharge units at the development is 104. The design will comply with design standards set out by Irish Water in the IW Code of Practice for Wastewater Infrastructure and Wastewater Infrastructure Standard Details. The water will be treated at Ringsend Waste Water Treatment Plant, which has the capacity of 1.64 million population equivalent (PE), before being discharged at Poolbeg, 1km from the plant.

Drainage plan is provided in Appendix B.

2.1.2 Construction Schedule

The duration of the proposed development's construction phase is 12-14 months.

3 Methodology

3.1 The EcIA Team

This EcIA was completed by JBA ecologists Mark Desmond (BSc (Hons), MSc) and Malin Lundberg (BSc, MSc). The report has been reviewed by JBA Senior Ecologist Patricia Byrne (BSc (Hons), PhD, MCIEEM). These staff members thus fulfil the Environmental Impact Assessment (EIA) Directive personnel requirements of 'competent persons'.

3.2 Policy and Legislation

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

3.3 Guidance

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

- Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland: Terrestrial, Freshwater, Coastal and Marine. Chartered Institute of Ecology and Environmental Management (CIEEM, 2018).
- Guidelines on the information to be contained in Environmental Impact Assessment Reports (Draft) Environmental Protection Agency (EPA, 2017).
- Guidelines for Assessment of Ecological Impacts of National Road Schemes (NRA, 2009a).

3.4 Baseline

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

- A desk-based assessment was carried out to collate information regarding protected/notable species and statutorily designated nature conservation sites in, or within close proximity to, the study area.
- A data search for protected and notable species was conducted using the National Biodiversity Data Centre (NBDC) Mapping System (NBDC, 2021). A 10km grid square was used to encompass the study area and species records were extracted from the map at a 10km² resolution.
- Information for statutory designated sites including Special Protection Areas (SPAs), Special Areas of Conservation (SACs), Ramsar Sites, Natural Heritage Areas (NHAs) and proposed NHAs (pNHA) was collected from the online resources provided by the National Parks and Wildlife Service (NPWS).

Other information on the local area was obtained, including information form the following sources:

- NPWS (2019). The Status of EU Protected Habitats and Species in Ireland. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin, Ireland.
- NPWS (2019b). The Status of EU Protected Habitats and Species in Ireland. Habitats Assessment Volume 2. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin, Ireland.
- NPWS (2019c). The Status of EU Protected Habitats and Species in Ireland. Species Assessment Volume 3. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin, Ireland.
- Environmental Protection Agency (EPA) online databases on water quality (Available online at https://gis.epa.ie/EPAMaps/).
- Aerial photography available from www.osi.ie and Google Maps http://maps.google.com/ ;
- All Ireland Red Data lists for vascular flora, mammals, butterflies, non-marine molluscs, dragonflies & damselflies, amphibians and fish;

- Water Framework Directive (WFD) water maps (available online at http://www.wfdireland.ie/maps.html and https://www.catchments.ie/); and
- International Union for Conservation of Nature and Natural Resources (IUCN) Red List of Threatened Species (available online at http://www.iucnredlist.org).

3.4.1 Zone of Influence

The zone of influence (ZoI) for the project is based on a judgement of the likely extent of the ecological impacts. This will vary for different ecological features, depending on their sensitivities to environmental change. For the majority of the project, impacts will be limited to within the site boundary. However, for impacts relating to airborne emissions, surface and ground water, the ZoI is extended to 10km.

3.4.2 Field Surveys

An ecological walkover of the site, including habitat mapping, mammal and preliminary bat roost surveys were conducted on the 03/03/2021 by Mark Desmond and Patricia Byrne of JBA Consulting to inform the ecological baseline of the site.

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

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

- Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes (NRA, 2009b).
- Best Practice Guidance for habitat Survey and Mapping. The Heritage Council. (Smith et al., 2011).
- Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edition). Bat Conservation Trust (Collins, 2016)

3.4.2.1 Bat Surveys

Preliminary Bat Roost Assessment

A survey for potential bat roosts was carried out on 03/03/2021 within the site and the suitability for bats to forage and commute within/along the site was assessed.

Structures and trees were inspected to determine the potential for bat roosts to be present, using the methods specified in Collins (2016).

Buildings, structures and trees on the site were categorised as having either 'negligible', 'low', 'moderate' or 'high' roosting potential and this was determined by applying the definitions given within the BCT Guidelines (Collins, 2016). Evidence of bat activity associated with potential roost sites includes bat droppings, urine staining, feeding remains, scratch marks and dead/live bats.

Potential Roosting Features (PRF) on trees include cracks/splits, crevices, rot cavities, fluting, loose bark and areas of Ivy *Hedera hibernica*. Evidence indicating the existence of a bat roost may include dark stains running below holes or cracks, bat droppings, odours, or scratch marks. However, roosting bats may still be present without any external evidence being recorded.

Activity Transect Survey

A bat activity transect survey was carried out on the 25/08/2021 by JBA ecologists and experienced bat surveyors Mark Desmond and Malin Lundberg. The survey started at sunset (20:30) and was carried out for two hours using heterodyne bat detectors as well as visual observations noted throughout the survey to identify usage of the site. Weather conditions, temperature and the location and nature of each survey were recorded on the Bat Survey Recording Form.

A static bat detector was installed on the site and left for five nights to record bat activity during a longer period. The data was analysed using AnalookW software.

3.5 Screening of Ecological Features

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

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

An Appropriate Assessment (AA) Screening Report has been produced separate to this EcIA (JBA Consulting, 2021), to assess the potential for effects on designated Natura 2000 sites. This AA Screening Report was submitted at planning application stage. The AA Screening Report concluded there would be no likely significant effects on European sites arising from the proposed development, either alone or in-combination with other plans or projects. Natura 2000 sites are therefore not considered in this report.

3.6 Assessment of the Effects on Features

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

3.7 Valuation of Receptors

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

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

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

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

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

Level of Value	Examples of Criteria
International	An internationally important site e.g. Special Protection Area (SPA), Special Area of Conservation (SAC), Ramsar (or a site considered worthy of such designation). A regularly occurring substantial population of an internationally important species (listed on Annex IV of the Habitats Directive). Designated shellfish waters. Major fisheries area.
National	A nationally designated site e.g. Natural Heritage Area (NHA), a proposed Natural Heritage Area (pNHA), statutory Nature Reserve, or a site considered worthy of such designation. A viable area of a habitat type listed in Annex I of the Habitats Directive or of smaller areas of such habitat which are essential to maintain the viability of

	a larger whole. A regularly occurring substantial population of a nationally important species, e.g. listed on The Wildlife Act 1976 or The Wildlife (Amendment) Act 2000. A species included in the Irish Red Data Lists/Books. Significant populations of breeding birds.
Regional/County (South Dublin County)	Species and habitats of special conservation significance within South Dublin County. An area subject to a project/initiative under the County's Biodiversity Action Plan. A regularly occurring substantial population of a nationally scarce species.
Local (works site and its vicinity)	Areas of internationally or nationally important habitats which are degraded and have little or no potential for restoration. A good example of a common or widespread habitat in the local area. Species of national or local importance, but which are only present very infrequently or in very low numbers within site area.
Less than local	Areas of heavily modified or managed vegetation of low species diversity or low value as habitat to species of nature conservation interest. Common and widespread species.

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

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

Level of Value	Examples of Criteria
Local Importance (higher value)	Locally important populations of priority species or habitats or natural heritage features identified in the Local BAP, if this has been prepared. Resident or regularly occurring populations (assessed to be important at the Local level) of the following: *Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; *Species of animal and plants listed in Annex II and/or IV of the Habitats Directive; *Species protected under the Wildlife Acts; and/or *Species listed on the relevant Red Data List. Sites containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or populations of species that are uncommon in the locality Sites or features containing common or lower value habitats, including naturalised species that are nevertheless essential in maintaining links and ecological corridors between features of higher ecological value
Local Importance (lower value)	Sites containing small areas of semi-natural habitat that are of some local importance for wildlife; Sites or features containing non-native species that are of some importance in maintaining habitat links

3.7.1 Magnitude of Impacts

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

- Positive - a change which improves the quality of the environment.
- Neutral - a change that does not affect the quality of the environment.
- Negative - a change which reduces the quality of the environment. A negative impact can be sufficiently minimised or eliminated by the adoption of appropriate mitigation measures.
- Uncertain - when the full consequences of a change in the environment cannot be described. In addition, the nature of impact can also be described in a number of ways, including:
- Direct/Indirect - a direct impact could include the loss of a species or habitat, whereas an indirect impact could be as a result of noise, dust or disturbance.
- Irreversible - when the character, distinctiveness, diversity or reproductive capacity of an environment is permanently lost. Alternatively, impacts can be temporary in nature, with the baseline condition restored after a period of time; this could occur over the short-term (1-2 years), medium-term (2-10 years) or long-term (+10 years).
- Cumulative - the addition of many small impacts to create one larger, more significant impact.
- Synergistic: where the resultant impact is of greater significance than the sum of its constituents.

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

Table 3-3: Definition of magnitude.

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

3.7.2 Significance of Impacts

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

Table 3-4: Significance of impacts matrix.

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

3.7.3 Residual Impacts

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

3.8 Cumulative Impacts

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

The following plans and projects were identified as potential sources of cumulative impacts:

- South County Dublin Development Plan 2016 - 2022
- Greater Dublin Drainage Strategy
- River Basin Management Plan for Ireland 2018-2021
- Planning Applications

3.9 Limitations and Constraints

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

- Changes to the site since surveys were undertaken cannot be accounted for, however the site surveys have followed the CIEEM guidance provided on suitable lifespan for surveys ((CIEEM (2019) Advice note on the lifespan of ecological reports and surveys).
- Adverse weather can cause delays to the schedule and alter the timing of works. This has been accounted for using a worst-case scenario where possible.
- The site visit was carried out in March 2021 period and the data does not reflect the whole ecology of the site throughout the year. Floral species identification was limited given that the timing of the ecological walkover survey was outside of the growing season. However most plants could be identified vegetatively.
- The precautionary principle is used at all times when determining potential ecological sensitivity of the site.

4 Baseline Conditions

These baseline conditions present information gathered from existing reports and desk-based sources as detailed in Section 3.4 and the site visit conducted on 03 March 2021.

4.1 Desk Based Assessment

4.1.1 Designated Sites

This section lists the designated sites of International and National importance. The ZoI for this project is 10km. Table 4-1 below lists these designated sites with their respective importance and distance from the proposed site development. Figure 4-1 displays the locations of the statutory designated sites, with Figure 4-2 displaying the non-statutory (proposed and existing Natural Heritage Area) designated sites within the ZoI of the site.

Table 4-2 summarises the site briefs, qualifying interests, relevant threats and pressures and their impacts and sources in relation to the Natura 2000 sites within the 10km ZoI.

Table 4-3 summarises the site briefs and ecological features of exclusively proposed Natural Heritage Areas within the 10km ZoI,

Table 4-1: Proximity and importance of designated sites within the 10km ZoI of the proposed development.

Name	Designation	Importance	Distance from site
Glenasmole Valley [001209]	SAC	International	7.1 km
Rye water Valley/Carton [001398]	SAC	International	8.0 km
Wicklow Mountains [002122]	SAC	International	8.4 km
Slade Of Saggart And Crookling Glen [000211]	pNHA	National	3.4 km
Grand Canal [002104]	pNHA	National	4.1 km
Lugmore Glen [001212]	pNHA	National	4.5 km
Liffey Valley [000128]	pNHA	National	7.0 km
Glenasmole Valley [001209]	pNHA	National	7.1 km
Dodder Valley [000991]	pNHA	National	7.4km
Kilteel Wood [001394]	pNHA	National	7.5 km
Rye Water Valley / Carton [001398]	pNHA	National	8.0 km
Royal Canal [002103]	pNHA	National	8.8 km

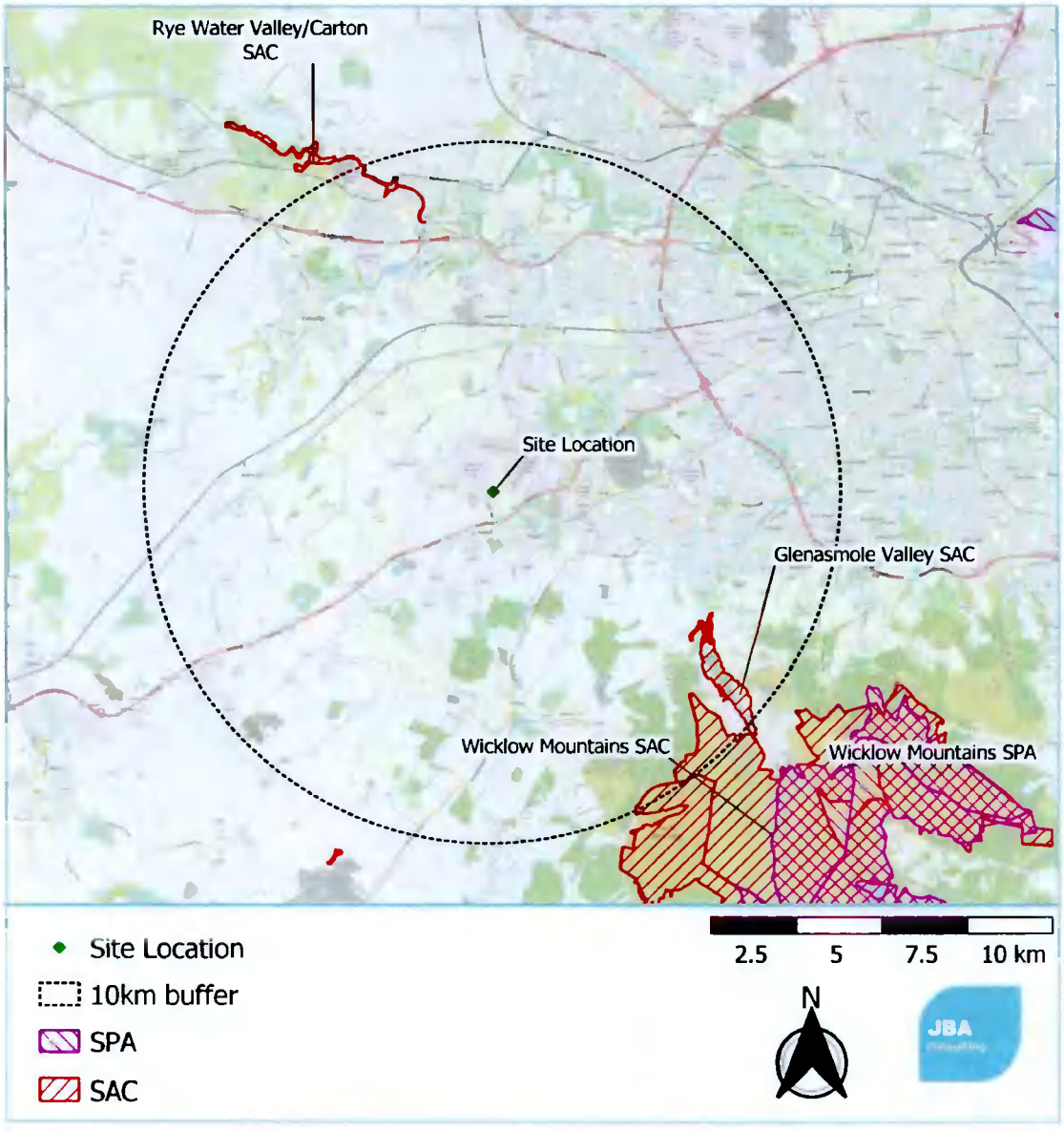


Figure 4-1: Statutory designated sites within the ZoI of the development

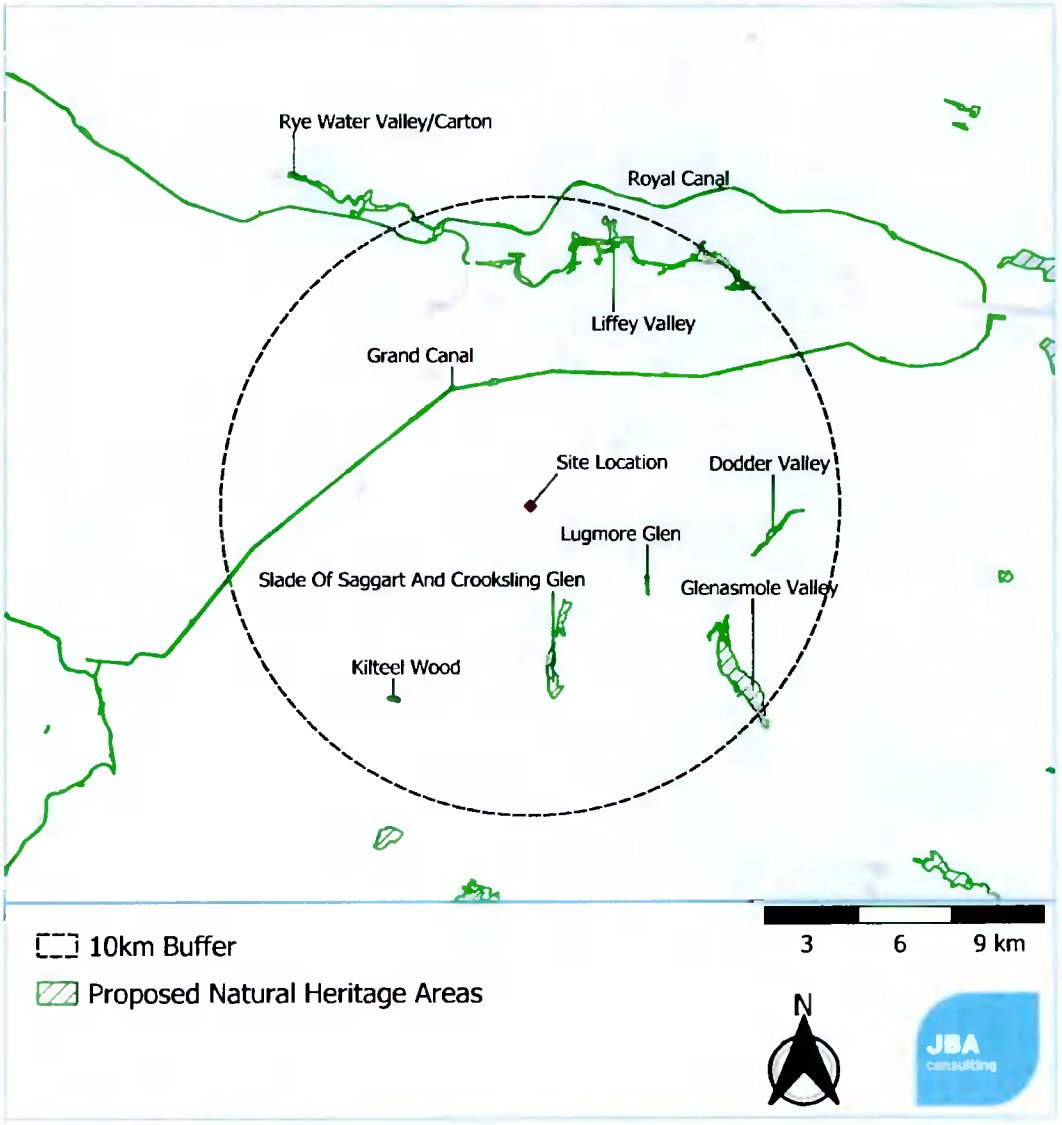


Figure 4-2: Non-statutory designated sites within the ZoI of the development

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

Site Name	Brief	Qualifying Interests	Project-relevant Threats / Pressures: Impact (Source)
Rye Water Valley / Carton SAC	The Rye Water Valley / Carton SAC is a river valley site, which includes at its western end a large area of estate woodland and an artificial lake. The eastern section of the site includes a section of railway, canal and aqueduct; it continues as far as Leixlip town. The importance of the site lies in the presence of a number of rare plant and animal species and a rare habitat, i.e. thermal, mineral, petrifying spring. The spring gives rise to a calcareous marsh, the habitat for *Vertigo angustior* and *Vertigo moulinsiana*. This marsh is species-rich and holds a number of plant and insect species which are rare or locally uncommon in Ireland. Four Red Data Book plant species have been recorded from the site, two of which, *Hypericum hirsutum* and *Viola hirta* are legally protected. The woods at the eastern end of the site are also of some ornithological interest (NPWS, 2017).	- Petrifying Springs* [1130] - Narrow-mouthed Whorl Snail (*Vertigo angustior*) [1014] - Desmoulin's Whorl Snail (*Vertigo moulinsiana*) [1016] (NPWS, 2018)	Continuous urbanisation: Moderate impact (outside) Dispersed habitation: Low impact (outside)# Roads, motorways: Low impact (outside)# (Full list of threats / pressures - NPWS, 2017)
Glenasmole Valley SAC	Glenasmole Valley lies at the northern foothills of the Dublin and Wicklow Mountains. Dry calcareous pasture grassland, improved to varying degrees, is a main habitat of the valley sides and occurs in association with wet grassland and, in places of seepage, fen or marsh type vegetation. The site has important examples of petrifying springs. The physical and chemical properties of the springs have been studied. Good examples of orchid rich calcareous grassland, including *Pseudorchis albida* (legally protected) and *Orchis morio* (Red Data Book species) are found here. Molinia meadows are also represented (NPWS, 2017b).	- Semi-natural dry grassland and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (*important orchid sites) [6210] - *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410] - Petrifying springs with tufa formation (*Cratoneurion*)* [7220] (NPWS, 2020)	Discontinuous urbanisation: Moderate impact (outside)# (Full list of threats / pressures - NPWS, 2017b)
Wicklow Mountains SAC	An extensive upland site comprising much of the Wicklow Mountains and extending into Co. Dublin. The solid geology is mainly Leinster granites, flanked by Ordovician schists, mudstones and volcanics. The area has been glaciated and features fine examples of high corrie lakes, deep valleys and moraines. The site includes the headwaters of several major rivers, including the Liffey, the Dargle and the Slaney. The substrate over much of the site is peat, with poor mineral soil on the slopes and lower ground. Exposed rock and scree are included in the features found in the SAC. The dominant habitats on the site are blanket bog, heaths and upland grassland. The site comprises the largest complex of upland habitats in eastern Ireland, with important examples of blanket bog, wet heath and dry heath, extensive in area and mostly of good quality. Alpine heath occurs at high levels, along with calcareous and siliceous rocky habitats harbouring an arctic-	- Otter (*Lutra lutra*) [1355] - Oligotrophic water containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110] - Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletalia uniflorae and/or Isoeto-Nanojuncetea [3130] - Natural dystrophic lakes and ponds [3160] - Northern Atlantic wet heaths with *Erica tetralix* [4010] - European dry heaths [4030] - Alpine and Boreal heaths [4060] - Calaminarian grasslands of the *Violetalia calaminariae* [6130] - Species-rich Nardus grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) * [6230] - Blanket bogs (* if active bog) [7130]	Wildlife watching: Low impact (inside)# Trampling, overuse: Moderate impact (both)# Urbanised areas, human habitation: Moderate impact (both)# Collection (fungi, lichen, berries etc): Low impact (inside)# Outdoor sports and leisure activities, recreational activities:

Site Name	Brief	Qualifying Interests	Project-relevant Threats / Pressures: Impact (Source)
	alpine flora. A fine series of oligotrophic lakes occur, with some recorded to contain Arctic char (*Salvelinus alpinus*). Several oakwoods of moderate quality, typical of the dry acidic woods of eastern Ireland, are found. Eurasian Otter (*Lutra lutra*) occurs on several of the riverine systems (NPWS, 2017c).	- Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*) [8110] - Calcareous rocky slopes with chasmophytic vegetation [8210] - Siliceous rocky slopes with chasmophytic vegetation [8220] - Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] (NPWS, 2017d)	Moderate impact (both)# Paths, tracks, cycling tracks: Moderate impact (both)# (Full list of threats / pressures - NPWS, 2017c)

* = priority Annex I habitat

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

Table 4-3: Site briefs and ecological features of proposed Natural Heritage Areas within their respective 10km ZoI.

Site Name	Brief	Ecological Features of Conservation Concern
Slade Of Saggart And Crookling Glen pNHA	This site is located in the south-west of Co. Dublin and stretches from Brittas northwards to approximately 2km south of Saggart. The northern half of the site comprises a river valley with steep tree-covered sides, while the southern side is flatter and contains two small lakes, the Brittas Ponds. The trees are mostly of planted origin with fine specimens of Beech (*Fagus sylvatica*), Ash (*Fraxinus excelsior*), Oak (*Quercus* spp.) and Birch (*Betula* spp.); with some Whitebeam (*Sorbus hibernica*) also occurring. The flora of the site is notable for the presence of the rare Red Data Book species, Yellow Archangel (*Lamiastrum galeobdolon*). South of Crooksling Glen are Brittas Ponds, a Wildfowl Sanctuary, that supports a variety of wildfowl, including Teal, Mallard, Pochard and Tufted Duck (NPWS, 2009).	- Whitebeam (*Sorbus hibernica*) - Yellow Archangel (*Lamiastrum galeobdolon*) - Teal (*Anas crecca*) - Mallard (*Anas platyrhynchos*) - Pochard (*Aythya ferina*) - Tufted Duck (*Aythya fuligula*)
Grand Canal pNHA	The Grand Canal is a man-made waterway linking the River Liffey at Dublin with the Shannon at Shannon Harbour and the Barrow at Athy. The Grand Canal proposed Natural Heritage Area (pNHA) comprises the canal channel and the banks on either side of it. A number of different habitats are found within the canal boundaries - hedgerow, tall herbs, calcareous grassland, reed fringe, open water, scrub and woodland. The diversity of the water channel is particularly high in the eastern section of the Main Line - between the Summit level at Lowtown and Inchicore. Otter spraints are found along the towpath, particularly where the canal passes over a river or stream. The Smooth Newt (*Lissotriton vulgaris*) breeds in the ponds on the bank at Gollierstown in Co. Dublin. The rare and legally protected Opposite-leaved Pondweed (*Groenlandia densa*) (Flora Protection Order 1987) is present at a number of sites in the eastern section of the Main Line, between Lowtown and Ringsend Basin in Dublin (NPWS, 2009b).	- Otter (*Lutra lutra*) - Smooth Newt (*Lissotriton vulgaris*) - Opposite-leaved Pondweed (*Groenlandia densa*)
Lugmore Glen pNHA	This small wooded glen is located about 2km south-east of Saggart in Co Dublin. It is quite a narrow valley cut in glacial drift. A small stream winds through the valley. The wood is mainly comprised of dense Hazel (Corylus avellana) but also contains Ash, Elder (*Sambucus nigra*) and Blackthorn (*Prunus spinosa*). The herb layer is quite rich, especially towards the stream, with species such as Wood-sorrel, Bugle (*Ajuga reptans*), Primrose (*Primula vulgaris*), Honeysuckle (*Lonicera periclymenum*), Bluebell (*Hyacinthoides non-scripta*), Ivy (*Hedera hibernica*), Wood-sedge (*Carex sylvatica*), Woodruff (*Galium odoratum*) and Wood Speedwell occurring. The importance of this site is that it is a fine example of a wooded glen with a good representation of woodland plants. The flora of the site is notable for the presence of the rare Red Data Book species, Yellow Archangel (NPWS, 2009c).	- Yellow Archangel (*Lamiastrum galeobdolon*)
Kilteel Wood pNHA	This site is located about 10km north-east of Naas and immediately east of the village of Kilteel. The wood is situated on a hill which rises to 248m. The site is a small heathy wood mostly of Oak (*Quercus* spp.) and Downy Birch (*Betula pubescens*). Other trees present include Beech, Sycamore (*Acer pseudoplatanus*), Ash and Scots Pine (*Pinus sylvestris*). In a clearing gorse (*Ulex europaeus, U. gallii*) and Heather (*Calluna vulgaris*) occur. The ground vegetation is restricted, with the following species – Bilberry (*Vaccinium myrtillus*), Bluebell, Greater Stitchwort (*Stellaria holostea*), Wood Sage (*Teucrium scorodonia*), Heath Bedstraw (*Galium saxatile*), Red Fescue (*Festuca rubra*), Wavy Hair-grass (*Deschampsia flexuosa*) and Creeping Soft-grass (*Holcus mollis*). This site is a fine example of a largely deciduous wood (NPWS, 2009d).	- General: Good quality deciduous woodland
Glenasmole Valley pNHA	As per the Natura 2000 SAC description.	As per those outlined in Natura 2000 SAC description.
Liffey Valley pNHA	The Liffey Valley site is situated along the River Liffey between Leixlip Bridge on the Kildare-Dublin border and downstream of the weir at Glenaulin, Palmerstown, Co. Dublin. The river is a Salmon river and there are a series of weirs along the river between Palmerstown and Leixlip. The main terrestrial habitat included within the site is mixed deciduous woodland on fertile, limey alluvium and boulder clay, in which Beech is dominant	- Atlantic Salmon (*Salmo salar*) - Green Figwort (*Scrophularia umbrosa*) - Hairy St. John's-wort (*Hypericum hirsutum*)

Site Name	Brief	Ecological Features of Conservation Concern
	in some areas. These woodlands occur on both sides of the river and normally consist of old estate woodlands. A wet marsh occurs on the strip of land between the Mill Race and the river east of the metal bridge and west of the paint factory. This marsh is fed by seepage from the Mill Race and plant species such as Bulrush (*Typha latifolia*), Marsh-marigold (*Caltha palustris*) and sweet-grass (*Glyceria* spp.) occur here. The threatened Green Figwort (*Scrophularia umbrosa*), a species listed in the Irish Red Data Book, is recorded from a number of stations along the river within the site. The rare and legally protected Hairy St. John's-wort (*Hypericum hirsutum*) (Flora Protection Order 1987) has been recorded from the woodlands in this site. The threatened Yellow Archangel, listed in the Irish Red Data Book, is also recorded from these woodlands (NPWS, 2009e).	- Yellow Archangel (*Lamiastrum galeobdolon*)
Dodder Valley pNHA	This stretch of the River Dodder extends for about 2 km between Firhouse Bridge and Oldbawn Bridge in the south-west of Dublin City. The vegetation consists of woodland scrub mainly comprising Willows spp., but up to thirteen species of tree have been recorded. The understorey vegetation contains a good variety of plant species, including Early-purple Orchid (*Orchis mascula*) and Bugle. Along the banks there are wildflower meadows with a good diversity of plant species. Forty-eight bird species have been recorded recently in the area, including Little Grebe (*Tachybaptus ruficollis*), Kingfisher (*Alcedo atthis*), White-throated Dipper (*Cinclus cinclus*) and Grey Wagtail (*Motacilla cinerea*). Part of the riverbank supports a Sand Martin (*Riparia riparia*) colony of up to 100 pairs. The site also supports a population of Otter. The site represents the last remaining stretch of natural riverbank vegetation on the River Dodder in the built-up Greater Dublin Area (NPWS, 2009f).	- Little Grebe (*Tachybaptus ruficollis*) - Kingfisher (*Alcedo atthis*) - Grey Wagtail (*Motacilla cinerea*) - Sand Martin (*Riparia riparia*) - Otter (*Lutra lutra*)
Rye Water Valley / Carton pNHA	As per the Natura 2000 SAC description.	As per those outlined in Natura 2000 SAC description.
Royal Canal pNHA	The Royal Canal is a man-made waterway linking the River Liffey at Dublin to the River Shannon near Tarmonbarry. A number of different habitats are found within the canal boundaries - hedgerow, tall herbs, calcareous grassland, reed fringe, open water, scrub and woodland. The hedgerow, although diverse, is dominated by Hawthorn (*Crataegus monogyna*). The vegetation of the towpath is usually dominated by grass species. Otter spraints are found along the towpath, particularly where the canal passes over a river or stream. The rare and legally protected Opposite-leaved Pondweed (Flora Protection Order 1987) is present at one site in Dublin, between Locks 4 and 5. *Tolypella intricata* (a stonewort listed in the Red Data Book as being vulnerable) is also in the Royal Canal in Dublin, the only site in Ireland where it is now found. The ecological value of the canal lies more in the diversity of species it supports along its linear habitats than in the presence of rare species. It crosses through agricultural land and therefore provides a refuge for species threatened by modern farming methods (NPWS, 2009g).	- Otter (*Lutra lutra*) - Opposite-leaved Pondweed (*Groenlandia densa*) - *Tolypella intricata*

4.1.2 Screening of Designated Sites

4.1.2.1 Natura 2000 sites

The Red Bog, Kildare SAC and Poulaphouca Reservoir SPA are both located upstream from the project site, >10km away from the site and out of the path of the prevailing wind (south-westerly (Met Éireann 2020)). Surface water from the site cannot reach both Natura 2000 sites.

An AA Screening has been carried out for this project by JBA Consulting (2021). Following initial screening, and based upon best scientific judgement it is concluded that there will be **no likely significant effects** from the project on the following Natura 2000 sites within the AA Screening ZoI, either alone or in combination with any other plans or projects:

- Glenasmole Valley SAC
- Rye water Valley/Carton SAC
- Wicklow Mountains SAC
- Wicklow Mountains SPA

4.1.2.2 Proposed Natural Heritage Areas

Glensamole Valley pNHA is located within Glensamole Valley SAC and Rye Water Valley/Carton pNHA is located within Rye Water Valley/Carton SAC. These pNHAs have the same receptors as their respective Natura 2000 sites. The AA Screening (JBA Consulting, 2021) concludes that due to the site location, distance to the Natura 2000 sites and prevailing winds, impacts are not anticipated on any of the Natura 2000 sites. As Glensamole Valley pNHA and Rye Water Valley/Carton pNHA have the same receptors, these are covered by the assessment in the AA Screening report and are not considered to be impacted.

The following pNHAs lies partly within the same sub-catchment as the proposed site: Slade Of Saggart And Crookling Glen pNHA, Grand Canal pNHA and Liffey Valley pNHA. However, due to lack of surface water pathway between the proposed development site and the pNHAs, impacts are not anticipated on these designated sites and they are not considered further in this report.

Dodder Valley pNHA and Royal Canal pNHA have aquatic ecological receptors, however these site lies in a separate sub-catchment than the proposed development site. Impacts on these sites are therefore not anticipated from the proposed development and they are not considered further in this report.

Lugmore Glen pNHA and Kilteel Wood are woodland habitats and the only potential connection with the site would be via air pathways. Given the distance and type of habitats, these sites are not anticipated to be significantly impacted by the proposed development and are not considered further in this report.

Therefore, as there are no direct pathways between the site and the pNHA sites, the following pNHA sites are **screened out**;

- Slade Of Saggart And Crookling Glen [000211]
- Grand Canal [002104]
- Lugmore Glen [001212]
- Liffey Valley [000128]
- Glenasmole Valley [001209]
- Dodder Valley [000991]
- Kilteel Wood [001394]
- Rye Water Valley / Carton [001398]
- Royal Canal [002103]

4.2 Results of Site Visit

An ecological walkover survey was conducted on the 3rd of March 2021 by JBA Senior Ecologist Patricia Byrne and JBA Assistant Ecologist Mark Desmond. Habitats and species recorded at the site are presented in detail in the following sections. The value of each habitat is based on recordings from the site visit, following the criteria set out in Table 3-2.

4.2.1 Habitats

The site consists of predominately arable land used for crop growing. The eastern boundary/south eastern access corridor has increased variability in linear habitats. The proposed entry to the development via Jordanstown Road lies on vacant industrial land used as open storage for construction equipment and prefabricated buildings. Habitats recorded are listed in Table 4-4 and detailed descriptions are provided in the sections below. A habitat map is provided in Figure 4-3 and Appendix D.

Table 4-4: List of habitats recorded on site

Habitat	Fossitt Code
Hedgerows/Scrub	WL1/WS1
Drainage ditches	FW4
Treelines	WL2
Hedgerows	WL1
Arable crops	BC1
Recolonising bare ground	ED3
Dry meadows and grassy verges	GS2
Buildings and artificial surfaces	BL3
Spoil and bare ground	ED2
Earth bank	BL2

Figure 4-3: Habitats within the site area.

Hedgerows/Scrub (WL1/WS1)

A mixture of short scrub and a hedgerow runs along the edge of the drainage ditch which delineates the south eastern boundary of the arable crop habitat (Figure 4-4). Botanical species found include Bramble *Rubus fructicosus* agg and Hawthorn *Crataegus monogyna* with Male Fern *Dryopteris filix-*

mas and Ivy *Hedera hibernica* as understory. There was irregular occurrence of Elder *Sambucas nigra*. The density of scrub and tree species is lower than in the hedgerow (WL1) habitat described below.

This habitat provides potential cover for mammals and nesting habitat for birds. This habitat is considered to be of local importance (higher value).

Figure 4-4: Hedgerow on the banks of the drainage ditch running along the eastern boundary of the proposed site.

Drainage Ditches (FW4)

A drainage ditch runs the length of the southern boundary of the site. At the time of the survey the ditch was dry for the first 300m along the access corridor until an adjoining culvert running under the next field provided a flow of water along the boundary of the arable crop habitat. Botanical species found were *Apium* spp. in the wetted section and Goat Willow *Salix caprea* along the length of the ditch. Nettle *Urtica dioica* and Bramble cover the drainage ditch to the south-west while Male Fern was present on the bank side to the north east.

There are no other watercourses within the site or connected with the drainage ditch. Baldonnel Stream is located approximately 320m west of the site, running through the business park and culverted at some locations, and River Camac is located approximately 720m to the east of the site.

The drainage ditch habitat is considered to be of local importance (lower value).

Treelines (WL2)

A treeline of Maple *Acer campestre* runs behind metal fencing on the northern boundary of the site's south-western access corridor, with a small staggered cluster of Laurel *Prunus laurocerasus* hedgerow recorded. The invasive Butterfly-bush *Buddleja davidii* was recorded among the trees near the entrance to the access corridor, outside of the subject lands. Further treelines of Hawthorn were found on the western boundary of the arable crop habitat, with a dense, hedge like understory of Bramble and Willowherb *Epilobium* spp.

This habitat is considered to be of local importance (higher value).

Hedgerows (WL1)

A hedgerow on a raised bank runs along the ditch of the south-western access corridor, switching from the north bank to the south bank halfway along the ditch if walking in a north-easterly direction. The hedgerow consists of Blackthorn *Prunus Spinosa*, Bramble, Elder and the occasional Ash *Fraxinus excelsior*. An undergrowth of Ivy and Lords-and-ladies *Arum maculatum* was recorded (Figure 4-5). Lesser Celandine *Ficaria verna* and Cleaver *Galium aparine* were identified adjacent to the hedgerow.

This habitat is considered to be of local importance (higher value).

Figure 4-5: Lords-and-ladies growing in the hedgerow.

Arable crops (BC1)

The proposed site area is largely dominated by cultivated land used for arable crop production. At the time of the survey the crops had been cut down to winter stubble (Figure 4-6). There was some presence of *Veronica* spp. most likely Common Field Speedwell *Veronica persica*.

This habitat is considered to be of less than local importance.

Figure 4-6: Arable crop cut down to winter stubble dominates the proposed site area

Recolonising bare ground (ED3)

Recolonising bare ground was present at the entrance to the south-western corridor, where gravel hardcore was recolonised by unidentifiable (due to the season) grass species. Pioneer species such as Nettle, Dandelion *Taraxacum* spp. and Thistle *Cirsium* spp. were recorded.

This habitat is considered to be of less than local importance.

Dry meadows and grassy verges (GS2)

Dry meadow habitat makes up the majority of the access corridor to the south-west of the site (Figure 4-7). There is also a grassy verge along a section of the drainage ditch. Grasses were recorded but were cut short and out of season for identification. The was a recorded botanical assemblage of Dock *Rumex* spp., Creeping Buttercup *Ranunculus repens*, Daisy *Bellis perennis*, Creeping Thistle *Cirsium arvense*, Bramble, and Cleaver. A single Maple was observed at the entrance to the site.

This habitat is considered to be of less than local importance.

Figure 4-7: Multiple habitats of maple treeline, dry meadow, bare ground, hedgerow and ditch along the south western access corridor of the proposed site.

Buildings and artificial surfaces (BL3)

This habitat is present at the proposed vehicular access to the development via Jordanstown Road. The area is a mixture of exposed ground, gravel, prefabricated buildings, and construction machinery. Willowherb, grass assemblages and Bramble were present at its border.

This habitat is considered to be of less than local importance.

Spoil and bare ground (ED2)

A hardcore gravel road ran the length of the south east corridor between GS2 and FW4, and ran around to the north, along the western border, adjacent the arable crops (BC1).

This habitat is considered to be of less than local importance.

Earth bank (BL1)

A vegetated earth bank runs between the ditch and the adjacent field. Grass species, Bramble and Daisy were recorded.

This habitat is considered to be of less than local importance.

4.2.2 Flora

No protected floral species were recorded by JBA ecologists during the ecological walkover survey of the proposed site. The NBDC (2021) records were referenced and no occurrence of protected floral species has been recorded within the site's boundary to date.

4.2.3 Fauna

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

4.2.3.1 Terrestrial Mammals

Evidence of Rabbit *Oryctolagus cuniculus* burrow digging was found across the arable crop habitat, but none were actively used and were often found incomplete. Rabbit droppings were also recorded.

A review of records held by the NBDC returned records of the following terrestrial mammal species protected under the Wildlife Acts (As Amended) within 10km of the proposed site:

- Eurasian Badger *Meles meles*
- West European Hedgehog *Erinaceus europaeus*
- Eurasian Red Squirrel *Sciurus vulgaris*
- Pine Marten *Martes martes*
- Red Deer *Cervus elaphus*
- European Otter *Lutra lutra*

Badger, Hedgehog and Pygmy Shrew

The site may occasionally be used by Badger, Hedgehog and Pygmy Shrew *Sorex minutus*. No signs of these species were observed during the survey and no Badger setts were found. However, given the presence of hedgerows and treelines which provide cover and commuting habitat for the species, the site is considered to be of local importance for these mammals.

Red Squirrel and Pine Marten

These mammals are extremely shy and woodland specialists therefore due, to the urban environment, the site can be considered of less than local importance for these mammals.

Red Deer

Red Deer occur in woodlands and upland areas, no signs of the species were recorded within the site. The site is considered to be of less than local importance for this mammal.

Otter

No signs of Otter were recorded within the site. Given the distance to nearest watercourse (approximately 320m to Baldonnel Stream) and the lack of suitable habitat within the site, the site is considered to be of less than local importance for Otter.

4.2.3.2 Bats

Bat Roost Suitability

The site is considered to be of **negligible suitability for roosting bats** due to the lack of habitat features likely to be used by roosting bats.

Foraging and commuting habitat

Bats use linear features, such as hedgerows/treelines, to commute. The initial site visit recorded treelines and hedgerows along the east and west boundary of the proposed site. There is a lack of linear features further north and east of the site, some treelines and hedgerow occur along the fields located south of road R120.

Four species of bat, namely Common Pipistrelle *Pipistrellus pipistrellus*; Soprano Pipistrelle *Pipistrellus pygmaeus*; Leisler's Bat *Nyctalus leisleri*; and Whiskered Bat *Myotis mystacinus*, have been recorded by JBA in recent years within 2km of the proposed development (JBA, 2020a; 2020b). Additionally, three other bat species, namely Natterer's Bat *Myotis nattereri*; Daubenton's Bat *Myotis daubentonii*; and Brown Long-eared Bat *Plecotus auratus*, have been recorded within 10km of the proposed development site (NBDC, 2021).

The transect survey undertaken on 25/08/2021 recorded high activity of three species of bats, namely Common Pipistrelle, Soprano Pipistrelle and Leisler's Bat, that were observed foraging and commuting within the site (Table 4-5).

Table 4-5: Bats recorded during the transect survey carried out on 25/08/2021.

Species	Number recorded	Observation
Common Pipistrelle	68	Foraging back and forth and commuting along eastern hedge and western treeline
Soprano Pipistrelle	35	Foraging back and forth and commuting along eastern hedge and western treeline
Leisler's Bat	18	Foraging at ditch NE corner and along eastern hedge and commuting along western treeline

The static bat detector was deployed to record the bat activity throughout the nights for several nights. However, due to unforeseen technical issues, the recorded data was corrupted and could not be analysed. Instead, a predictive modelling was conducted using the data recorded during the transect survey to estimate the usage of the site by bats throughout an entire night. The calculations anticipate that the bats are using the site between sunset and sunrise, which is roughly 9h during the period at the end of August. This suggests ca 306 calls from Common Pipistrelle, 157 calls from Soprano Pipistrelle and 81 calls from Leisler's bat. Bat activity varies throughout the night, though highest activity is generally around dusk As such, the predictive occurrence is precautionary and the actual activity is more likely to be less than what is estimated. The temperature at the evening of survey was 17-19 degrees, with dry weather and clear sky, thus considered to be optimal for bats.

Evaluating the site's importance for commuting and foraging bats

The value of the foraging and commuting importance of the site is determined by the commonality of the bat species, the number of bats, the presence of roosts, and the structures and features of the habitats used for foraging and commuting. The evaluation is based on the guidance "Valuing Bats in Ecological Impact Assessment" (Wray et al., 2010) and shown in Table 4-6.

Table 4-6: Evaluation of parameters based on the guidance "Valuing Bats in Ecological Impact Assessment" (Wray et al., 2010).

Value	Commuting			Foraging		
	Common Pipistrelle	**Soprano Pipistrelle**	**Leisler's**	**Common Pipistrelle**	**Soprano Pipistrelle**	**Leisler's**
Species	2	2	2	2	2	2
Number of bats	20	15	10	20	15	10
Roosts nearby	3	3	3	3	3	3
Habitat/ Features	3	3	3	3	3	3
Score	28	23	18	28	23	18
Importance	**County**	**County**	**Local**	**County**	**County**	**Local**

Reasoning: Common Pipistrelle, Soprano Pipistrelle and Leisler's Bat are the commonest bat species in Ireland. The transect survey recorded a high activity of Common Pipistrelle and moderate to low

activity of calls from Soprano Pipistrelle and Leisler's Bat. The site itself does not offer any roost potential, but there is potential for roosts to be present nearby. The site has moderate value as commuting habitat due to the moderate field size and presence of hedgerows/treelines (some gappy). Foraging habitat exist in the form of arable fields, hedgerows and open watercourses.

The evaluation of these parameters indicate that the site is of county importance for commuting and foraging for Common Pipistrelle and Soprano Pipistrelle and of local importance Leisler's Bat. The overall importance of the site for commuting and foraging bats is therefore at county level.

4.2.3.3 Breeding Birds

The hedgerow habitat was utilised by Wren *Troglodytes troglodytes*, Blackbird *Turdus merula*, and Blue Tit *Cyanistes caeruleus* at the time of the site visit.

The dry meadows and grassy verges habitat was utilised by White Wagtail *Motacilla alba* and Great Tit *Parus major*.

Many Skylark *Alauda arvensis* were present in the arable crop habitat. Skylark is listed as Amber on the 'Birds of Conservation Concern in Ireland' (BoCCI) list. Amber-listed species have an unfavourable status in Europe and have moderately declined in abundance.

Eurasian Curlew *Numenius arquata* rested 200m north of the site boundary within arable crop habitat for approximately one hour during the assessment. Curlew is an Annex II species listed in the Birds Directive and is a Red listed species on the BoCCI list. Curlews move inland around early March each year to breed. However, breeding sites are rough pastures and moorland, which provides a mix of both open patches to feed and dense vegetation to hide their nests in (NPWS, 2017e). The proposed site is an arable field which is currently cut down to stubble. Therefore, this habitat type is not a preferred habitat for Curlew.

Several amber listed birds have been recorded on NBDC within the 10km grid squares, some of which use the same type of habitat found on site and could therefore be found within the site.

Though BoCCI listed species are not given a specific protection they are, along with the majority of bird species, protected under the Wildlife Acts (1976 – 2012) where it is an offence to hunt, interfere with or destroy their breeding or resting places unless authority is obtained via statutory licence provision. The hedgerows and treelines of the proposed site offer suitable nesting habitat for breeding birds. As a precautionary approach, due to the suitability of the proposed site for breeding birds, the site has been valued as being of local ecological importance (higher value) for birds.

4.2.3.4 Amphibians

No amphibians were recorded during the ecological walkover of the site, however the drainage ditch along the south-eastern boundary is likely to provide habitat for amphibians, Common Frog *Rana temporaria* and Smooth Newt *Triturus vulgaris*, as well as potential spawning habitat. Common Frog is protected under Annex V [1213] of the EU Habitats Directive and the Wildlife Act 1976 (& Amendments). Smooth Newt is protected under the Wildlife Act 1976 (& Amendments). Amphibians are considered to be of local ecological importance (higher value).

4.2.4 Invasive Non-native species

Evidence of Rabbit presence and activity was recorded but no specimens were observed during the walk over of the site. Rabbits are designated as Medium Impact Invasive Species (NBDC, 2021) but are not listed as a Third Schedule non-native invasive species, subject to restrictions under Regulations 49 and 50 of S.I. No. 477/2011 - European Communities (Birds and Natural Habitats) Regulations 2011.

A small sized Butterfly-bush approximately 1m tall was observed in the adjacent site near the site boundary. This is also a Medium Impact Invasive species but not listed as a Third Schedule species subject to restrictions of S.I. No. 477/2011.

All invasive non-native species on the NBDC (2021) database, present within 2km of the proposed development site, are provided in Appendix E.

4.3 Screening of Ecological Features

The screening of ecological features is given in Table 4-7. Those features screened out are not considered further in this assessment. Ecological features that are screened in are assessed for potential impact during construction and operation in the following sections.

Table 4-7: Summary of ecological features and the screening assessment.

Ecological feature	Value	Screening	Reasoning
Glenasmole Valley SAC	International	Screened out	Lack of connectivity
Rye water Valley/Carton SAC	International	Screened out	Lack of connectivity
Wicklow Mountains SAC	International	Screened out	Lack of connectivity
Slade Of Saggart And Crookling Glen pNHA	National	Screened out	Lack of connectivity
Grand Canal pNHA	National	Screened out	Lack of connectivity
Lugmore Glen pNHA	National	Screened out	Lack of connectivity
Liffey Valley pNHA	National	Screened out	Lack of connectivity
Glenasmole Valley pNHA	National	Screened out	Lack of connectivity
Dodder Valley pNHA	National	Screened out	Lack of connectivity
Kilteel Wood pNHA	National	Screened out	Lack of connectivity
Rye Water Valley / Carton pNHA	National	Screened out	Lack of connectivity
Royal Canal pNHA	National	Screened out	Lack of connectivity
Hedgerows/Scrub	Local (higher)	**Screened in**	
Drainage ditches	Local (lower)	**Screened in**	
Treelines	Local (higher)	**Screened in**	
Hedgerows	Local (higher)	**Screened in**	
Arable crops	Less than local	Screened out	Low value
Recolonising bare ground	Less than local	Screened out	Low value
Dry meadows and grassy verges	Less than local	Screened out	Low value
Buildings and artificial surfaces	Less than local	Screened out	Low value
Spoil and bare ground	Less than local	Screened out	Low value
Earth bank	Less than local	Screened out	Low value
Mammals - Badger, Hedgehog and Pygmy Shrew	Local (higher)	**Screened in**	
Mammals - Red Squirrel, Pine Marten, Red Deer, Otter	Less than local	Screened out	Low value/low suitability
Bats	County	**Screened in**	
Breeding Birds	Local (higher)	**Screened in**	
Amphibians	Local (higher)	**Screened in**	

5 Potential Impacts

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

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

5.1 Do Nothing Scenario

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

5.2 Construction Phase

5.2.1 Habitats

5.2.1.1 Hedgerows/Scrub, Treelines, Hedgerows

The treelines and hedgerows bordering the site will be retained. However, there is a risk for damage of these habitats by working machinery during the construction phase. This could impact on birds potentially nesting in the trees and hedgerows and on mammals foraging and commuting.

The unmitigated effect to this development during construction would result in a short-term, negligible impact to these habitats of local importance.

5.2.1.2 Drainage ditches

The local drainage ditch running along the south-eastern boundary of the site may be impacted by accidental spill resulting in pollutants (hydrocarbon leakages from site machinery) or excess of sediment for excavation works entering the water. These inputs would lead to degradation of water quality and affect species communities, i.e. aquatic invertebrates and flora, and amphibians potentially using the habitat.

The unmitigated effect to this development during construction would result in a short-term, negligible impact to this habitat of local importance.

5.2.2 Species

5.2.2.1 Mammals - Badger, Hedgehog and Pygmy Shrew

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

The unmitigated effect to this development during construction would result in a short-term, minor impact to this species group of local importance.

5.2.2.2 Bats

The three bat species that are using the site are utilising it for commuting and foraging with main activity along hedgerow and treeline.. The site has negligible suitability for roosting bats and the development will therefore not result in a reduction of roosting habitat.

Predicted impacts to bats from construction may come from lighting at night during the bat active season (April-October), which could illuminate commuting and foraging habitats. Lighting during the hours of darkness would reduce the quality of foraging habitat for bats. Noise effects associated with the works would be temporary during diurnal parts of the day and nocturnal noise effects are anticipated to be significant.

The unmitigated effect to this development during construction would result in a short-term, minor impact to this species group of county importance.

5.2.2.3 Breeding Birds

Potential impact on birds during construction is through potential damage to nesting habitat and noise disturbance. A range of bird species nest in trees and hedgerows. This habitat will be retained, however potential damage to vegetation during the breeding season could result in the loss of individuals, including young of the species.

Skylark nest in hollows on the ground with ideal vegetation height 20-50 cm in a variety of habitats, including cultivated areas. The arable field at the time of survey was cut to stubble, however the suitability of the habitat for nesting Skylark could change during their breeding period (April to early August). Machinery and site preparation works could damage or destroy potential nests which could result in the loss of individuals of the species.

The disturbance caused by noise and increased human presence is unlikely to cause stress to this group, given the temporary nature of the works.

The unmitigated effect to this development during construction would result in a short to medium-term, minor impact to this species group of local importance.

5.2.2.4 Amphibians

Impacts on water quality in the local drainage ditch caused by accidental spill of pollutants and sedimentation could also impact on amphibians potentially using the habitat. Direct contact with the pollutants may result in reduced fitness of amphibians and degradation of habitat as a result of reduced water quality could impact on survival of frog spawn and tadpoles.

The unmitigated effect to this development during construction would result in a short to medium-term, minor impact to this species group of local importance.

5.3 Operational Phase

5.3.1 Habitats

5.3.1.1 Hedgerows/Scrub, Treelines, Hedgerows

The treelines and hedgerows around the site boundary will be retained and enhanced with screening tree planting and native hedge planting along the site boundary. Trees to be planted along the border include Alder *Alnus glutinosa*, Hazel *Corylus avelana*, Holly *Ilex aquifolium*, Sessile Oak *Quercus petraea*, Scots Pine *Pinus sylvestris*, Blackberry *Rubus fruticosus* and Crack Willow *Salix fragilis*. The native hedge planting will include the following species: Hawthorn *Crataegus monogyna*, Blackthorn *Prunus spinosa*, Dog Rose *Rosa canina*, Field Maple *Acer campestre*, Holly and Hazel.

The new planting will enhance these habitats by adding more species and thickening/gap filling the existing treelines/hedgerows. This will provide further cover for mammals and birds and additional nesting and foraging opportunities.

The enhancement of these habitats would result in a long-term, minor positive impact on these habitats of local importance.

5.3.1.2 Drainage ditches

During operation, surface water runoff from hardstanding surfaces will be attenuated on site in an attenuation system with a capacity of 3880m^3 and passed through a silt trap and petrol interceptor system and though SUDS which will remove pollutants and reduce runoff rate. The eastern corner of the site lies within Flood Zone A (1% Annual Exceedance Probability (AEP)) and B (0.1% AEP). Soft landscaping will be incorporated in this corner and a raised berm between hard standing surfaces and the landscaped area will prevent flooding on hardstanding surfaces where potential pollutants from vehicles could occur. As such, there is no risk of pollutants to discharge untreated into the drainage ditch.

The unmitigated effect to this development during operation would have a neutral impact on this habitat of local importance.

5.3.2 Species

5.3.2.1 Mammals - Badger, Hedgehog and Pygmy Shrew

The development will result in a reduction of available habitat for mammals. The main habitat that is lost is arable crop which is of low suitability for these mammals given the regular occurrence of agricultural activities. However, the boundary treelines and hedgerows will be retained and will continue to provide cover and commuting opportunities for the species.

The unmitigated effect to this development during operation would result in a neutral impact on this species group of local importance.

Boundary treelines and hedgerows will be enhanced with planting of screening trees and native hedge planting (as specified in Section 5.3.1.1) and it is proposed to plant native wildflowers along the western side of the warehouse which will provide nectar for pollinating insects. The supplementary planting around the boundary will improve the commuting habitat for mammals.

5.3.2.2 Bats

Impacts on bats during operation would be from artificial lighting proposed with the development. This could have an adverse effect to bats commuting and foraging by disrupting flight paths along the boundary treelines and hedgerows and thus cause fragmentation of commuting and foraging habitat. It is important to maintain connectivity between the surrounding green areas and the linear habitats; and the development's lighting design and planting plan must compliment the current potential commuting routes (vegetated dark corridors).

The unmitigated effect to this development during operation would result in a long-term, minor impact on this species group of county importance.

5.3.2.3 Breeding Birds

No negative impacts are anticipated on breeding birds during operation of the project. The proposed planting will thicken and fill gaps in the existing treeline/hedgerow habitat which will enhance its suitability for birds nesting and foraging. The proposed native species supports pollinators and it is proposed to plant native wildflowers along the western side of the warehouse which will also provide habitat for pollinating insects, which is a food resource for the local bird species.

The unmitigated effect to this development during operation would result in a minor positive impact on this species group of local importance.

5.3.2.4 Amphibians

During operation, surface water runoff from hardstanding surfaces will be attenuated on site in an attenuation system with a capacity of 3880m^3 and passed through a silt trap and petrol interceptor system and though SUDS which will remove pollutants and reduce runoff rate. The eastern corner of the site lies within Flood Zone A (1% Annual Exceedance Probability (AEP)) and B (0.1% AEP). Soft landscaping will be incorporated in this corner and a raised infill between hard standing surfaces and the landscaped area will prevent flooding on hardstanding surfaces where potential pollutants from vehicles could occur. As such, there is no risk of pollutants to discharge untreated into the drainage ditch and impact on amphibians.

The unmitigated effect to this development during operation would result in a neutral impact on this species group of local importance

5.4 Summary

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

- Degradation of treeline/hedgerow/scrub habitat and protected species that may inhabit it (breeding birds, mammals) through physical damage during the construction phase.
- Pollution of the drainage ditch and aquatic species it may host (amphibians, aquatic invertebrates).
- Disturbance of commuting and foraging terrestrial mammals and bats, as well as potentially accidental fatal entrapment for terrestrial mammals during construction.

- Disturbance of commuting, foraging and nesting for local breeding birds.
- Lighting impact on bats during operation.

6 Mitigation

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

6.1 Construction Phase

6.1.1 Release of pollutants and sediment impacting on local drainage ditch and amphibians

The following pollution and sediment controls shall be implemented during the construction works.

6.1.1.1 Sediment Control Measures

Appropriate mitigation measures should be implemented prior and during the construction phase to ensure that the water quality is not adversely affected through pollution incidents and the release of contaminants from the site.

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

- C532 Control of water pollution from construction sites. Guidance for consultants and contractors (www.ciria.org);
- C515 Groundwater control – design and practice, 2nd ed. (www.ciria.org);
- CIRIA Guidance C741: *Environmental good practice on site guide* (Charles & Edwards, 2015; CIRIA, 2019 - www.ciria.org);
- Inland Fisheries Ireland 2016 'Guidance on Protection of Fisheries During Construction Works In and Adjacent to Waters';
- NRA 2008 ' Guidelines for the crossing of watercourses during the construction of national road schemes'.
- Inland Fisheries Ireland (2020) Planning for Watercourses in the Urban Environment. A Guide to the Protection of Watercourses through the use of Buffer Zones, Sustainable Drainage Systems, Instream Rehabilitation, Climate / Flood Risk and Recreational Planning

The above best practice mitigations will alleviate the risk associated with accidental spills and runoff events. In particular silt runoff into the drainage ditch will be prevented by incorporating the following actions:

- A silt fence shall be installed between the works and the drainage ditch prior to any works commencing. The silt fencing should be removed only when bare soil is re-vegetated and sediment movement is no longer a risk.
- The silt fence will be a permeable geotextile barrier installed vertically on support posts and entrenched in the ground.
- The extent of the silt fencing shall take account of the slope of the land and extent of works;
- Run-off from the working site or any areas of exposed soil should be channelled and intercepted for discharge to silt-traps with over-flows directed to land to prevent any flow of surface water to the drainage ditch;
- Silt-traps should be maintained and cleaned regularly during the course of site works;
- All excavations close to the drainage ditch should be carried out in the dry and there will be no working near the ditch during heavy or sustained period of rain;
- All soil stockpiles shall be located >10m away from the drainage ditch and within the extent of the silt fence. All stock piles shall be covered to minimise the risk of rain / wind erosion;

General measures

- No excavation shall take place below the water-table on the site;
- Any stockpiling of topsoil must be considered and planned such that risk of pollution from these activities is minimised. Drainage from the topsoil storage area should not enter the drainage ditch;

- The compound shall be located within the site boundary and will be sited as far from the drainage ditch (>50m) as possible in order to minimise potential impacts. If it is not possible to locate the site compound >50m from the stream, a plastic membrane will be put up with berms around the edge to prevent any contaminants leaking through;
- Drainage collection system for washing area to prevent run-off into surface water system;
- There must be no discharge to, including any suspended solids or other deleterious matter, to the drainage ditch;
- All site runoff will be controlled and if necessary diverted to a sediment tank and the contents will be removed off site by a licenced waste contractor;
- Daily checks will be carried out and records kept on a weekly basis and any items that have been repaired/replaced/rejected noted and recorded. Any items of plant machinery found to be defective should be removed from site immediately or positioned in a place of safety until such time that it can be removed.

6.1.1.2 Pollution Control and Spill Prevention

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

- Emergency response awareness training for all Project personnel on-site works.
- Appropriate and sufficient spill control materials will be installed at strategic locations within the site. Spills kits for immediate use will be kept in the cab of mobile equipment.
- Oil booms and oil soakage pads should be maintained on-site to enable a rapid and effective response to any accidental spillage or discharge. The correct disposal of these booms and pads will be demonstrated during the tool box talks. Records will be maintained by the environmental manager of the used booms and pads taken off site for disposal.
- Spill kits will be stored in the site compound with easy access for delivery to site in the case of an emergency. A minimum stock of spill kits will be maintained at all times and site vehicles will carry spill kits at all times. Spill kits must include suitable spill control materials to deal with the type of spillage that may occur and where it may occur. Typical contents of an on-site spill kit will include the following as a minimum;
    - Absorbent granules;
    - Absorbent mats/cushions;
    - Absorbent booms.
- Spill kits will contain gloves to handle contaminated materials and sealable disposal sacks.
- Track mats, drain covers and geotextile material.
- Any pollutant chemicals, fuels of any kind, concrete additives etc. used on site will be stored in labelled waterproof and secured protective containers to mitigate the risk of pollution of the watercourses.
- To minimise any impact on the underlying subsurface strata from material spillages, all oils, solvents etc, used during construction will be stored in temporary bunded area within the construction compound, however they will not be stored on site overnight.
- Oil and fuel storage tanks shall be stored in designated areas, and these areas will, as a minimum, be bunded to a volume not less than the following;
    - 110% of the capacity of the largest tank or drum within the bunded area (plus an allowance of 30 mm for rainwater ingress); or
    - 25% of the total volume of substances which could be stored within the bunded area.
- The site compound fuel storage areas and cleaning areas will be rendered impervious and will be constructed to ensure no discharges will cause pollution to surface or ground waters.
- Re-fuelling of construction vehicles and the addition of hydraulic oils or lubricants to vehicles, will take place in a designated area which will be away from any existing surface water drains which could also provide pathways to the underlying geology.
- Mobile plant will refuel over a drip tray with an absorbent mat;
- The contractor will ensure that no hazardous or noxious materials enters a watercourse/drain. Should this situation arise emergency procedures will be activated;

- Potentially contaminated run off from plant and machinery maintenance areas will be managed within the site compound surface water collection system.
- Damaged or leaking containers will be removed from use and replaced immediately.
- During all works the weather forecast will be monitored and a contingency plan developed to prevent damage or pollution during extreme weather. Machinery and equipment will not be left on-site during such events and will be removed beforehand.

6.1.2 Degradation of treeline/hedgerow habitat

The boundary treelines and hedgerow will be protected during the construction phase to avoid damage to the retained vegetation. The following recommendations are from 'Guidelines for the Protection and Preservation of Trees, Hedgerows and Scrub Prior to, During and Post Construction of National Road Schemes' (NRA, 2006).

- A protective fencing will be reacted prior to any excavations and construction activities start.
- Any excavation carried out within the Root Protection Area should be undertaken with extreme care, avoiding damage to the protective bark covering larger roots.
- Once any remedial works are complete and all plant equipment has evacuated the site, protective barriers can be removed.

6.1.3 Disturbance/harm to species (mammals, bats, birds)

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

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

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

6.1.4 Harm of nesting Skylark

Skylark nest on the ground during the period April to August. If site preparation and excavation works are to be carried out between April and August, a survey shall be undertaken in advance of the works to ensure that there will be no impacts on ground nesting birds such as Skylark. The survey will be carried out by an appropriately qualified ecologist, i.e. able to identify bird species and experience in undertaking breeding bird surveys. If nests are found, they will be safeguarded, with an appropriate buffer, until the chicks have successfully fledged.

6.2 Operational Phase

6.2.1 Lighting Disturbance to Bats

The proposed site lighting provided by Axiseng Consulting Engineers has been reviewed and the mitigation measures outlined below have been incorporated into the design. The lighting design is provided in Appendix F.

Hours of illumination:

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

Light levels and type:

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

Column heights of lamp posts:

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

Dark corridors:

Taking into consideration all of the above recommended mitigation measures, a dark corridor (lighted in a bat-friendly manner) along the south-eastern boundary of the site should be maintained for bats at all times (Figure 6-1). This will allow for bats commuting through the site to do so safely. The corridor will have bat-appropriate lighting, including back light guards to eliminate light spill on retained vegetation, and the existing treeline/hedgerow will be thickened by planting of additional trees. The bat friendly, low intensity site lighting allows for the bats to commute along the outskirts of the site following existing linear habitat.

Figure 6-1: Dark corridor to be retained along the southern boundary for commuting bats.

6.2.2 Biodiversity Enhancement

The landscape planting plan incorporates trees and hedge planting with under-storey planting including a mix of native and non native pollinator friendly species as per the All-Ireland Pollinator Plan (NBDC 2021b). Native shrubs will be planted along the site boundary and a native wildflower meadow is proposed along the western and southern side of the warehouse. Green walls will be incorporated on the southern wall of the warehouse. Tree species for the planting plan for the site were specifically chosen, given their ability to support the local wildlife, including mammals, bats and breeding birds.

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

- Lime *Tilia cordata* - Supports diverse insect life, including pollinator species like bees and moths, suppling local birds and bats with prey.
- Downy Birch *Betula pubescens* / Silver Birch *Betula pendula*- provides food and habitat for a wide range of insect species, including caterpillars of many moths. The seeds are eaten by siskins, greenfinches and redpolls.

- Bird Cherry *Prunus padus* - Flowers support numerous pollinator species, while the fruits are often consumed by Badger, other small mammals and bird species
- Scots Pine *Pinus sylvestris* - Preferred by Red Squirrel for building dreys
- Alder *Alnus glutinosa* - Supports diverse insect life, supplying local birds and bats with prey.
- Hazel *Corylus avellana* - Provides food for the caterpillars of moths, suppling local birds and bats with prey. Additionally, hazelnuts are eaten by Greater Spotted Woodpecker, Wood Pigeon and small mammals.
- Holly *Ilex aquifolium* - Provides dense cover and good nesting opportunities for birds, while its deep, dry leaf litter may be used by Hedgehogs and small mammals for hibernation. Also supports pollinator species providing prey for bats and birds. Its berries are also an important food source for birds in the winter.
- Sessile Oak *Quercus petraea* - Supports diverse insect life, suppling local birds and bats with prey. Additionally, the acorns are consumed by Red Squirrel and Badger.
- White Willow *Salix alba* - Supports diverse insect life, suppling local birds and bats with prey. Generally preferred by a range of bird species for nesting.
- Field maple *Acer campestre* - It is attractive to many species of ladybird, hoverfly and birds. Lots of species of moths feed on its leaves. The flowers provide nectar and pollen sources for bees and birds, and small mammals eat the fruits.

Additionally, the shrub and hedge species and wildflower mixture set to be sown on-site will enhance overall biodiversity and support local pollinators.

7 Residual Impact

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

7 1 Do Nothing Scenario

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

7 2 Construction Phase

Preparation of the site for development will result in disturbance to the foraging and commuting habitat for protected species such as terrestrial mammals, bats and breeding birds. As Skylark could potentially be nesting in the arable field, the works could destroy nests and harm individuals of this ground nesting bird. There is potential for pollution during construction activities to discharge in the drainage ditch running along the southern border of the site which could degrade the water quality and impact on amphibians potentially using the habitat.

Mitigation measures to be implemented include sediment and pollution controls, protection of retained boundary treelines/hedgerows and general avoidance measures incorporating good site management and construction practices to minimise harm and disturbance to species. If works are to start during the breeding bird season, the ground will be surveyed for nesting Skylark by an ecologist prior to works commence and any nests found will be safe guarded. The mitigation in place will minimise any significant and/or permanent impact on the environment and residual impacts during the construction phase are not anticipated.

7.3 Operational Phase

The proposed mitigation, including dark corridors for local bat species; and enhancement measures of additional planting for the operational phase should act to improve existing habitats for all species and overall will have a neutral - negligible residual impact that will be positive in time following the maturing of the biodiversity enhancements.

7.4 Summary Table

Table 7-1 below presents a summary of the EclA assessment describing the ecological features, the potential impacts of the works on these ecological features, their value according to European environmental law, the severity of the impact and mitigation measures which are to be implemented to avoid these impacts. Residual impacts following the implementation of mitigation measures are also provided.

Table 7-1: Summary table of impact assessment, mitigation measures and residual impact.

Ecological Features	Importance of Feature	Potential Impact	Impact without Mitigation	Mitigation	Significance of Effects of Residual Impacts
Construction Impacts					
Habitats					
Hedgerows/Scrub, Treelines, Hedgerows	Local (higher value)	Degradation due to physical damage by working machinery.	Negligible	Follow measures outlined in section 6.1.2, including protective fencing and if excavations are necessary within the tree root protection zone they should be undertaken with extreme care.	No significant residual impact anticipated
Drainage ditch	Local (lower value)	Temporary decrease in Water Quality from sediment released and/or pollution incidents.	Negligible	Follow pollution prevention and silt control measures outlined in Section 6.1.1.	No significant residual impact anticipated
Species					
Mammals – Badger, Hedgehog, Pygmy Shrew	Local (higher value)	Disturbance to commuting and foraging activities in the vicinity of the site. Potential loss of life through accidental entrapment.	Minor	Follow mitigation measures outlined in section 6.1.3, including limit work to daylight hours, any necessary lighting directed away from boundary vegetation and ensuring pipes are capped and excavations covered during night to avoid mammals becoming entrapped.	No significant residual impact anticipated
Bats	County	Disturbance to commuting and foraging activities due to lighting	Minor	Follow mitigation measures outlined in section 6.1.3, including limit work to daylight hours and any necessary lighting directed away from boundary vegetation.	No significant residual impact anticipated
Breeding Birds	Local (higher value)	Reduction of nesting and foraging habitat Noise and human activity disturbance	Minor	Follow measures outlined in section 6.1.2, including protective fencing around treelines and hedgerows which provide nesting and foraging habitat for birds. Follow mitigation measures outlined in	No significant residual impact anticipated

Ecological Features	Importance of Feature	Potential Impact	Impact without Mitigation	Mitigation	Significance of Effects of Residual Impacts
				relation to nesting Skylark in section 6.1.4. A qualified ecologist will survey for nesting Skylark prior to works commence, if works are to be carried out during their breeding period, April to August.	
Amphibians	Local (higher value)		Minor	Follow pollution prevention and silt control measures outlined in Section 6.1.1.	
Operation Impacts					
Habitats					
Hedgerows/Scrub, Treelines, Hedgerows	Local (higher value)	None	Minor positive	The landscape plan incorporates new planting will enhance the existing habitats and improve biodiversity on site. Enhancement measures are outlined in section 6.2.2.	No significant residual impact anticipated
Drainage ditch	Local (lower value)	None	Neutral	N/A	No significant residual impact anticipated
Species					
Mammals – Badger, Hedgehog, Pygmy Shrew	Local (higher value)	Reduction of habitat	Negligible	N/A	No significant residual impact anticipated
Bats	County	Long term Lighting impacts during operation	Minor	Follow measures outlined in section 6.2.1 incorporating sensitive lighting design and a dark corridor along the southern boundary for bats to commute. Biodiversity enhancement measures in the landscape plan (section 6.2.2) will provide planting suitable for a range of insects, which is a food resource for bats.	No significant residual impact anticipated
Breeding Birds	Local (higher value)	Intermittent disturbance due to human activity	Minor positive	Biodiversity enhancement measures in the landscape plan (section 6.2.2) will enhance the existing habitats providing more nesting and foraging opportunities for	No significant residual impact anticipated

Ecological Features	Importance of Feature	Potential Impact	Impact without Mitigation	Mitigation	Significance of Effects of Residual Impacts
				breeding birds.	
Amphibians	Local (higher value)	None	Neutral	N/A	No significant residual impact anticipated

8 Cumulative Impacts

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

8.1 Plans

8.1.1 South Dublin County Council Development Plan 2016 - 2022

The South Dublin County Council (SDCC) Development Plan sets out an overall strategy for the proper planning and sustainable development of the County. The objectives include a target of increased population and continuing the consolidation of established urban areas, to support and facilitate economic activity and to promote the ease of movement by sustainable modes (walking, cycling and public transport). The Plan also aims to protect and enhance surface water quality, to support, improve and protect Natura 2000 sites, and to develop an integrated Green Infrastructure network to enhance biodiversity, provide accessible parks, open spaces and recreational facilities (SDCC, 2016a). The plan also states that work will be in conjunction with Irish Water to protect existing water and drainage infrastructure, to promote investments aiming to support environmental protection and facilitate the sustainable growth of the county (SDCC, 2016a).

A Screening for Appropriate Assessment was carried out on the plan. This concluded that there are no likely significant direct, indirect or secondary impacts of the project on any Natura 2000 sites (SDCC, 2016b), therefore the South Dublin County Council (SDCC) Development Plan is not anticipated to contribute to cumulative or in-combination effects.

8.1.2 Greater Dublin Drainage Plan

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

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

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

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

8.1.3 River Basin Management Plan for Ireland 2018-2021

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

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

- Prevent deterioration of water body status.

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

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

Notably the nearby Griffeen River (LIFFEY_170) has been recently awarded a 'Good' WFD Status (2013-2018), an improvement on its previous 'Moderate' status; however it is currently considered to be 'At Risk' (EPA 2020b). It is also important to note that sub-category, Ecological Status or Potential, has improved from 'Moderate' to 'Good', as well as the downward trends in Ammonia-Total (N) and Total Oxidised Nitrogen (TON).

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

8.1.4 Other Projects

Since March 2018, the projects listed below (Table 8-1), which are not retention applications, home extensions and/or internal alterations, have been granted planning permission in the locality of the proposed site

Table 8-1: Projects granted planning permission since March 2017 in vicinity of proposed site.

Planning Reference	Address	Application Status	Decision date	Summary of development
SD18A/0420	Fortunestown Lane, Saggart, Co. Dublin	Grant Permission	30/01/19	Amendments to the permitted residential development (Reg. Ref. ABP-300555-18) arising from Condition 2 and will consist of: (a) development of a crèche and community facility (271sq.m) with associated external play area and car parking in lieu of duplex units A-01 and A-02 within Block A and all associated amendments to the permitted site layout plan, hard and soft landscaping and adjoining street; (b) revised boundary treatments to the permitted dwelling units to comprise Type 1, 2m high brick walls to the side of the dwelling units; Type 2, 1.8m high vertical timber fencing to the rear and side boundaries of the rear gardens and Type 3, 1.8m high brick gossip wall to the front of the dwelling units; the proposed amendments will result in a reduction in the total number of units on the site from 526 to 524 dwellings; all associated site and development works on c.23.9ha site at Fortunestown Lane and Garter Lane (lands generally bounded by the Luas Red Line, Saggart Luas stop and Fortunestown Lane to the south, Garter Lane to the west, Bianconi Avenue to the north and Citywest Business Park, Citywest TLC Nursing Home and the Cuil Duin residential development to the east).
SD18A/0214	Unit B1, Aerodrome Business Park, Collegeland, Rathcoole, Co. Dublin	Grant Permission	02/08/18	Extend the integrated ancillary offices on 2 floors within the existing warehousing Unit B1 (original Reg. Ref: SD07A/0223). The office extension comprises 48sq.m additional ancillary office on ground floor (provided from a change of use of existing warehouse area) and 48sq.m additional ancillary office area at first floor. There are no external alterations to the building as a result of the provision of this additional internal office accommodation and existing car parking provided on site remains sufficient in facilitating the extended building.
SD18A/0265	College Lane, Greenogue, Rathcoole, Co. Dublin	Grant Permission	04/04/19	Provision of 2 warehouses with ancillary three storey office and staff facilities and associated development. Building A will have a maximum height of 18.3m with a gross floor area of 15,286sq.m including a warehouse area (14,267sq.m), ancillary office area (413sq.m) and staff facilities (606sq.m). Building B will have a maximum height of 17.4m with a gross floor area of 26,384sq.m including a warehouse area (23,421sq.m), ancillary office areas (1,870sq.m) and staff facilities (1,093sq.m). The development will also include the provision of a new vehicular access to the site via the Greenogue Roundabout; internal roadways; pedestrian access; 422 ancillary car parking spaces; bicycle parking; HGV yards; level access goods doors; dock levellers; hard and soft landscaping; 2 ESB substations (18sq.m); lighting; boundary treatments; and associated site development works above and below ground
SD19A/0065	Tay Lane, Greenogue, Rathcoole, Co. Dublin	Grant Permission	23/04/19	Waste metal facility including waste electrical and electronic equipment (WEEE) and will include the provision of 1 light industrial unit with ancillary office and staff facilities (3,802sq.m with a maximum height of 12.4 metres); screened outdoor storage area (970sq.m) incorporating walls 4.2 metres in height; vehicular access to the site via the Greenogue Roundabout; pedestrian access; 29 ancillary car parking spaces; HGV yard; 10 HGV parking spaces; HGV weight bridge; brush wash and steam wash; hard and soft landscaping; access gate; ESB substation; lighting; cycle parking; boundary treatments; associated site development works above and below ground incorporating an access road on lands at College Lane;; Electrical Waste Management Limited currently have a waste permit (WFP-DS-11-0014-05) with a permitted volume of 82,833 tonnes per annum; an Environmental

				Impact Assessment Report has been prepared in respect of the proposed development.
SHD3ABP-300555-18	Site bounded by Fortunestown Lane, Garters Lane and Bianconi Avenue, Saggart, Co. Dublin	Grant Permission	26/03/18	A residential development comprising: 526 residential units and all associated site and development works as follows: - 274 3-bed 2 storey terraced units, 185 4-bed 2 and 3 storey terraced and end of terrace units, 67 2-bed apartment/duplex units (37 2-storey, 2 bed terraced duplexes, 18 1-storey 2 bed terraced apartments and 12 1 storey 2 bed end of terrace apartments). The development also provides for a district park (4.58 ha) and a neighbourhood park (0.71 ha) in accordance with the Fortunestown Local Area Plan 2012. Permission is also sought for 789 car parking spaces, bin storage areas, ESB substations and all associated site development and infrastructural works. Vehicular access to serve the proposed development will be provided via two new access points off Garter Lane and via a new signalised junction at the southeastern corner of the site to replace the existing roundabout off Fortunestown Lane. Provision is made for a future access to Bianconi Avenue. In addition, an interim local square is proposed within the subject site providing a direct pedestrian link from the proposed development to the Saggart Luas stop. Two direct pedestrian links are proposed between the subject site and the adjoining school sites permitted under Reg Ref No SD16A/0255 providing a direct link between the school and the proposed district park and a direct link from the west of the school site to the proposed residential development. Lands identified for future development are located along the southern boundary of the current application site adjacent to Fortunestown Lane/Saggart Luas Stop. These areas will be subject of a future planning application (Phase 2) and will include the final design and layout of the local square.
SD19A/0263	Aerodrome Business Park, Lands at Site G, Jordanstown Road & Jordanstown Way, College Land, Rathcoole, Co. Dublin	Grant Permission	10/10/19	Warehouse with ancillary three storey office and staff facilities and associated development. The warehouse will have a parapet height of 17 metres with a gross floor area of 11,012sq.m including a warehouse area (10,079sq.m), ancillary office areas (877sq.m) and staff facilities (56sq.m); provision of a new vehicular access/egress onto the Jordanstown Road, and the relocation of the entrance/exit on Jordanstown Way slightly to the west for HGV access; internal roadways; pedestrian access; 108 ancillary car parking spaces; bicycle parking; HGV yard including 13 HGV parking stands and 14 loading docks; hard and soft landscaping including green walls; lighting; photo-voltaic panels; ESB substation and switch room; plant; boundary treatments and associated development works above and below ground.
SD19A/0171	Greenogue Business Park, Site 601 & 605, Jordanstown Road & Jordanstown Ave, Rathcoole, Co. Dublin	Grant Permission	22/07/19	2 warehouses with ancillary three storey office and staff facilities and associated development. Unit 601 will have a maximum height of 16.1 metres with a gross floor area of 4,922sq.m including a warehouse area (4,224sq.m); ancillary office areas (322sq.m) and staff facilities (376sq.m). Unit 605 will have a maximum height of 15.7 metres with a gross floor area of 8,036sq.m including a warehouse area (7,032sq.m); ancillary office areas (568sq.m) and staff facilities (437sq.m); provision of new vehicular accesses/egresses to the sites with HGV access and egress to both units proposed via Jordanstown Avenue and car access and egress to both units proposed via Jordanstown Road; internal roadways; pedestrian access; 105 ancillary car parking spaces; bicycle parking; HGV yards; level access goods doors; dock levellers; hard and soft landscaping; boundary treatments; associated site development works above and below ground.
SD18A/0266	Moneenalion Commons Upper, Baldonnel Business Park, Dublin 22	Grant Permission	17/09/18	Amendments to the permitted logistics/warehousing scheme under SDCC Ref: SD15A/0309 (An Bord Pleanála Ref. PL06S.246392), as subsequently amended by SDCC Ref. SD17A/0362. The proposed amendments relate primarily to permitted Unit B and Unit C and consist of: (1) Omission of Unit C and provision of enlarged Unit B (increasing from

				10,967sq.m GFA to 18,617sq.m GFA) with a height of c. 17.65m including mezzanine level. The previously permitted Units A, B and C resulted in a total of 32,771sq.m. The proposed units A and B result in a total of 29,454sq.m. which results in an overall reduction of 3.317sq.m. GFA. (2) The proposed Unit B incorporates 690sq.m GFA of ancillary office space (a reduction of 386sq.m compared to the combined permitted ancillary office space within permitted Unit B and C). (3) Omission of one vehicular entrance and associated bridge between permitted Unit B and C and replacement with two vehicular entrances and associated bridges to either side of proposed Unit B. (4) Relocation substation. (5) Reduction in car parking spaces from 329 to 235; 54 bicycle parking spaces are proposed to service Unit B. (6) Resultant amendments to site layout, yards, elevations, signage, internal road layout, landscaping, ground works, drainage, gates, fencing, services and utilities and all associated and ancillary site development works.
SHD3ABP-305563-19	Fortunestown Lane, Saggart, Co Dublin	Grant Permission	03/02/20	488 apartment units comprising 118 1-bed units, 327 2-bed units and 43 3-bed units arranged in 5 blocks (Blocks A to E) and all associated public open spaces comprising landscaped courtyards and communal amenity spaces and private amenity spaces comprising terraces/balconies. The proposed Blocks A and B and Blocks C, D and E are arranged over separate single levels basements and comprise 5 storey blocks with a 9 storey element in Block B. Non-residential floorspace is proposed in the form of a creche of 431sq.m gross floor area, community space of 186sq.m and 472sq.m of retail/commercial floorspace divided across 3 units at ground floor level within Block B and 708sq.m of retail/commercial floorspace divided across 3 units and 1 café/bar/restaurant of 188sq.m within Block C all fronting onto a proposed landscaped local square located to the north of Saggart Luas stop. Vehicular access to serve the proposed development will be provided from a signalised junction at the south-eastern corner of the site replacing the existing roundabout off Fortunestown Lane and west of Cuil Duin and an east/west distributor road all as permitted under the neighbouring development (ABP Ref. 300555-18). Permission is also sought for 418 car parking spaces including 405 basement level spaces and 13 surface level spaces and a total of 706 cycle parking spaces including 620 basement level spaces and 86 surface level spaces, bin storage areas, ESB substations, public lighting, boundary treatments, surface water drainage infrastructure including modifications to the previously permitted flood conveyancing channel (ABP Ref: 300555-18) and all associated site development and infrastructure works.
SD19A/0196	Tay Lane, Greenogue, Rathcoole, Co. Dublin	Grant Permission	14/10/19	Modifications to the previously permitted Ref. SD16A/0406 consisting of the change of use of the dry bailing facility to a green waste recycling facility (excluding food and household general waste collection) including renovation and upgrade works to the fire damaged buildings and the addition of new green waste storage area and attenuation tanks (this application will also require a Waste Licence).
SD19A/0048	Moneenalion Commons Upper, Baldonnel Business Park, Dublin 22	Grant Permission	08/04/19	Amendments in the vicinity of a permitted bridge as part of a logistics/warehousing scheme permitted under Reg. Ref. SD15A/0309 (An Bord Pleanala Ref. PL06S.246392) as subsequently amended by Reg. Ref. SD17A/0362 and SD18A/0266 as follows: (1) minor relocation of the permitted bridge south and associated permanent diversion of watercourse (Camac); (2) provision of roundabout with interface to existing Business Park Road; (3) resultant amendments internal road layout, landscaping, ground works, drainage, services and utilities and all associated and ancillary site development works. A Natura Impact Statement has been prepared in respect of the proposed development and will be submitted

				with the planning application. (Clonlara Road is located to the south of the site and Casement Aerodrome is located to the north).
SD19A/0264	Aerodrome Business Park, Site Q2, Jordanstown Road, Collegeland, Rathcoole, Co. Dublin	Grant Permission	10/10/19	Warehouse with ancillary three storey office and staff facilities and associated development. The warehouse will have a parapet height of 17 metres with a gross floor area of 14,649sq.m including a warehouse area (13,494sq.m), ancillary office areas (1099sq.m) and staff facilities (56sq.m); provision of a new vehicular access/egress onto the Jordanstown Road; internal roadways; pedestrian access; 152 ancillary car parking spaces; bicycle parking; HGV yard including 26 HGV parking stands and 18 loading docks; hard and soft landscaping including green walls; lighting; photo-voltaic panels; ESB substation and switch room; plant; boundary treatments and associated development works above and below ground.
SD18A/0044	Tay Lane, Greenogue, Rathcoole, Co. Dublin	Grant Permission	05/04/18	(a) A standalone single storey office building and staffing facilities comprising of an area of 156sq.m; (b) The addition of staff car parking facilities comprising of 14 car parking spaces; (c) The addition of a new onsite bio cycle treatment plant treatment facility to service new office and staffing accommodation; (d) New ESB substation; (e) Landscaping boundary screening and new security fencing along with all ancillary site works.
SD20A/0061	Unit K2, Jordanstown Way, Aerodrome Business Park, Rathcoole, Co. Dublin	Grant Permission	22/06/20	Extensions to front of existing warehouse to include single storey infill enclosure over existing loading bay ramp (floor area to be 44.12sq.m with height to top of parapet of 6.2m above ground level); new single storey goods-in inspection store (floor area to be 55.98sq.m with a height to top of parapet of 4.8m above ground level); both structures complete with roller shutter access door & personnel door within the front/south elevation, together with site works.
SD19A/0370	Moneenalion Commons Upper, Brownsbarn and Collegeland, Baldonnell Business Park, Dublin 22	Grant Permission	29/01/20	Construction of two logistics/warehouse units (Unit C & D) southwest of Mountpark Baldonnell Phase 1 and west of the older original Business Park. Unit C will comprise of a GIA 11,492sq.m (including 592sq.m of associated office space); Unit D will comprise of a GIA 7,856sq.m (including 400sq.m of associated office space); provide for 193 car parking spaces and 56 bicycle spaces to serve the proposed development; flood mitigation works to store and attenuate flood flows from the River Camac; formation of plateaus on the site with surplus excavated material to allow for future development; access to the site will be from the existing Phase 1 development located on Clonlara Road; all ancillary landscaping, internal roads, associated infrastructure and site development works to support the development; the site is primarily greenfield and located between Casement Aerodrome and the N7 national route; the proposal will form a second phase of Development to that permitted under SD15A/0309 (ABP Ref. PL06S.246392) as amended by permissions SD17A/0362, SD18A/0266 and SD19A/0048; An Environmental Impact Assessment Report (EIAR) is submitted with the planning application.
SD20A/0204	Baldonnell Business Park, Baldonnell, Dublin 22	Grant Permission	05/10/20	Provision of a warehouse unit with ancillary office and staff facilities and associated development. The building will have a maximum height of 15.8m with a gross floor area of 2,222sq.m including a warehouse area (1,530sq.m), staff facilities (302sq.m) and ancillary office area (390sq.m) and will also include the provision of 1 new vehicular access/egress point along the north-west boundary of the subject site onto Clonlara Road; pedestrian access; 22 ancillary car parking spaces; bicycle parking; HGV marshalling yard with 2 loading bays; level access goods doors; dock levellers; access gate; signage; hard and soft landscaping; lighting; boundary treatments and associated site development works above and below ground.

SD20A/0215	Moneenalion Commons Upper, Brownsbarn and Collegeland, Baldonnell Business Park, Dublin 22	Grant Permission	15/10/20	The construction a logistics/warehouse unit (Unit E) southwest of Mountpark Baldonnell Phase 1 and west of the older original Business Park, Unit E will comprise of a GIA 60,747sq.m (including 2,020sq.m of ancillary office space and 4,802sq.m of other ancillary areas); Provide for 340 car parking spaces, 22 motorcycle parking spaces and 160 bicycle spaces to serves the proposed development; Flood mitigation works to store and attenuate flood flows from the River Camac; Formations of plateaux on the site with surplus excavated material to allow for future development of Unit F; Access to the site will be from the existing Phase 1 development (referenced above) located on Clonlara Road; amendments to the yard and entrance arrangement for permitted Unit D are proposed (SD19A/0048); All ancillary landscaping, internal roads, associated infrastructure and buildings and site development works to support the development which is primarily greenfield and located between Casement Aerodrome and the N7 national route. The proposal will form part of the second phase of development to that permitted under SD19A/0370 and Phase 1 under SD15A/0309 (ABP Ref. PL06S.246392), as amended by permissions SD17A/0362, SD18A/0266 and SD19A/0048. An Environmental Impact Assessment Report (EIAR) will be submitted to the Planning Authority with the planning application.
SHD3ABP-308088-20	Garters Lane, Saggart, Co Dublin	Grant Permission	21/12/20	224 apartment units arranged in 4 blocks and all associated public open spaces, communal amenity spaces and private amenity spaces comprising terraces/balconies. The proposed blocks are arranged over 2 single level basements (accessed via 2 vehicular ramps to east of the site) and comprise 5 to 6 storey blocks with an 8 storey element as part of Block A. Vehicular access to serve the proposed development will be provided via a new access at Garters Lane and will also provide access to lands to the east (development permitted under ABP ref PL06S.305563). Permission is also sought for 191 car parking spaces (180 at basement level and 11 at surface level); 470 bicycle parking spaces (290 at basement level at 180 at surface level); 1 ESB substation; 1 cycle store, hard and soft landscaping, pedestrian and cycle links, boundary treatments, public lighting, bin storage areas at basement, surface water drainage infrastructure and attenuation tanks, and all associated site development and infrastructure works.

8.2 Summary of Cumulative Impacts

The above planning applications may have significant impacts on the present aquatic and terrestrial ecological features through the following pathways: surface water and air (dust, pollution, and lighting). As described in in the South Dublin County Development Plan these projects require assessments of ecological features. If these assessments have been carried out in a correct way the mitigation in these reports will prevent cumulative impacts. Therefore, significant cumulative impacts are not expected to occur on the ecological features given that the proposed development will have no residual impact.

9 Conclusion

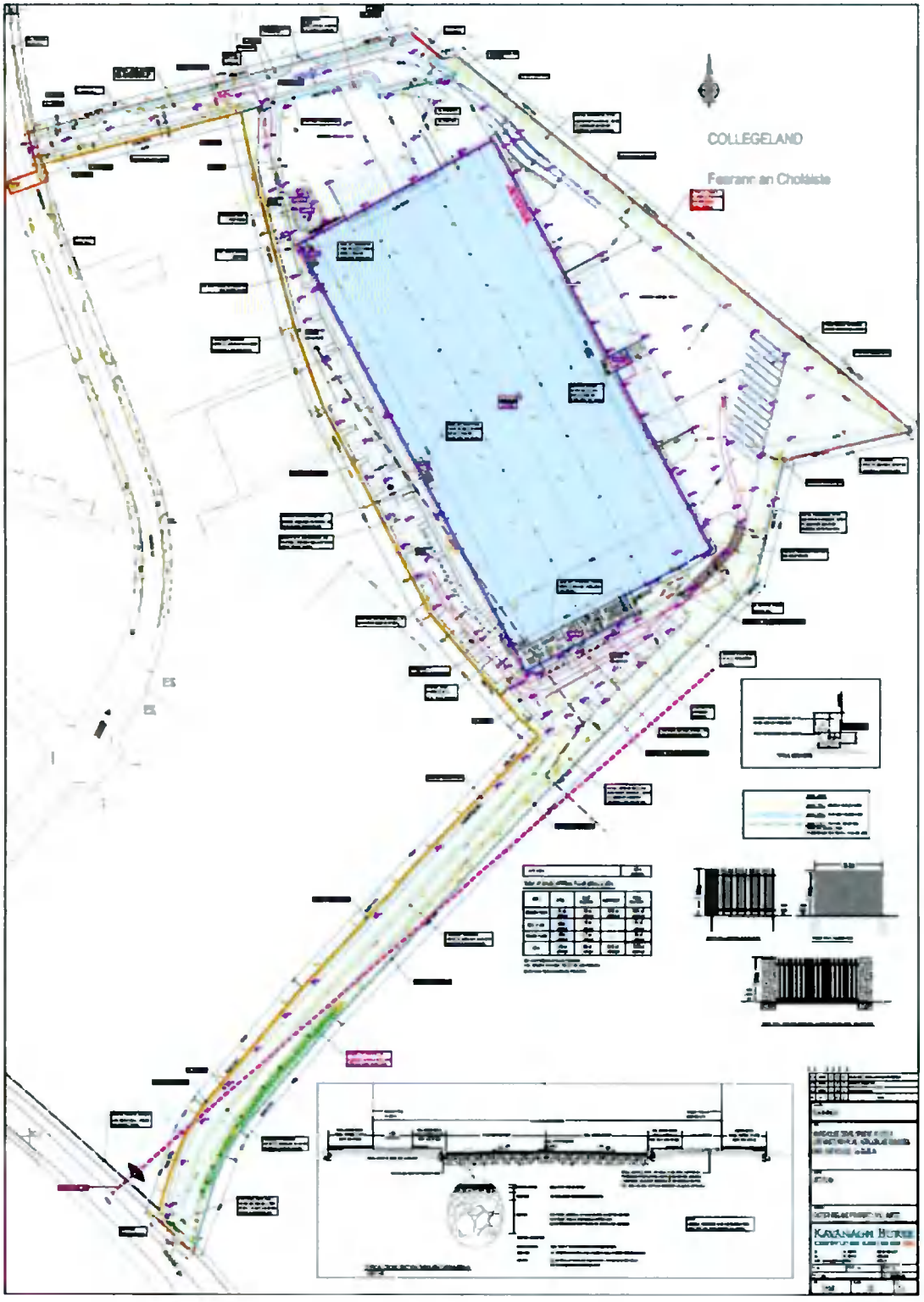
The construction of this proposed development has been shown to potentially impact a number of different habitats with local importance (treeline; hedgerow; scrub; and drainage ditches) and faunal groups (breeding birds; Badger; Hedgehog; Pygmy Shrew; bats; and amphibians) with local and county ecological importance.

Based upon the information supplied and provided that the development is constructed in accordance with the mitigation measures outlined above, there will be no significant impact in combination with other projects and plans, as result of the development and associated works on the ecology of the area and on any designated conservation sites.

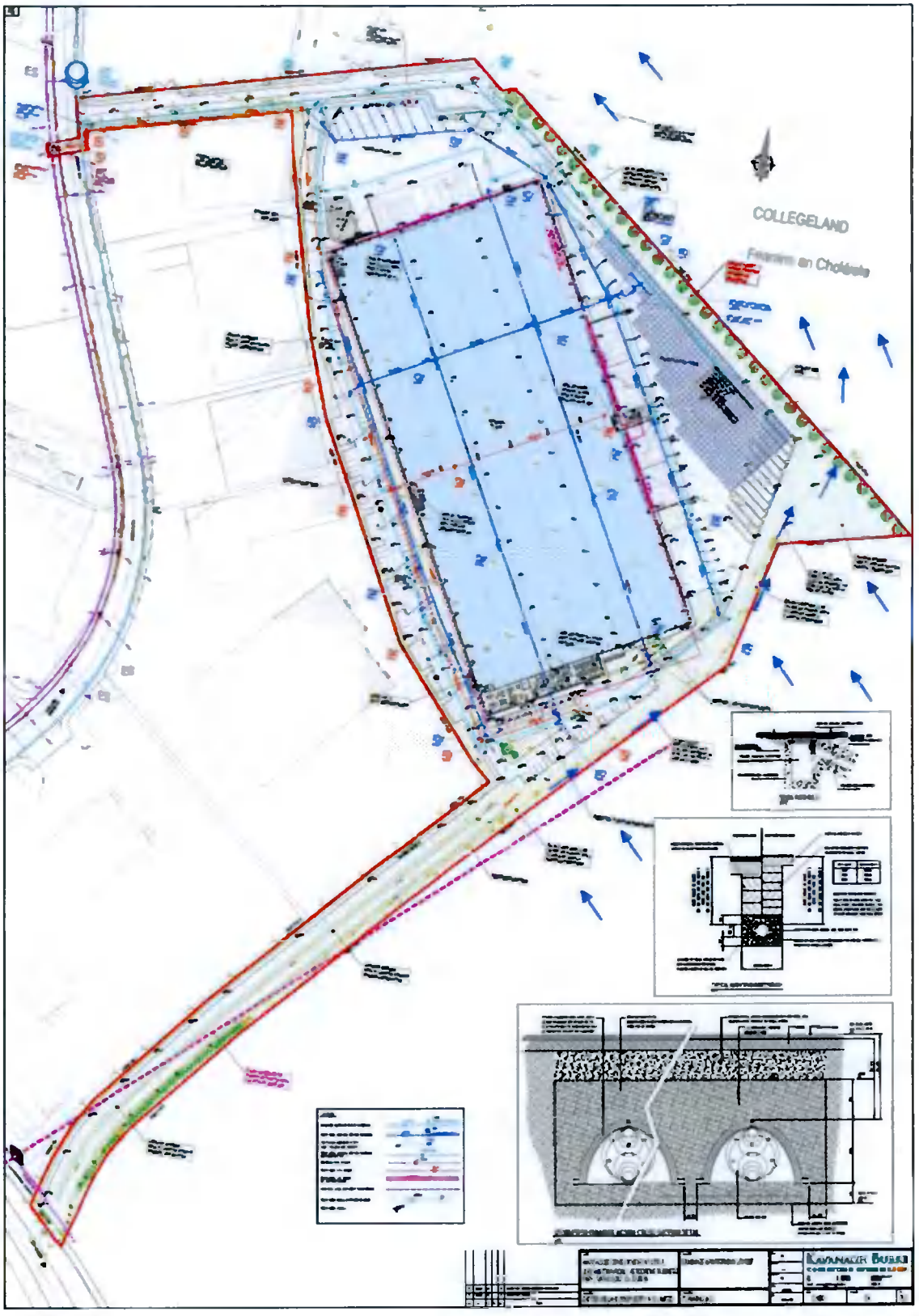
Furthermore, supplementary tree and hedge planting is proposed along the boundary of the site and a strip of wildflower meadow is proposed along the western and southern side of the warehouse, which is outlined in the landscape plan.

Appendices

A Site Layout Plan



B Drainage Layout



C Relevant Policy and Legislation

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

C.1 Biodiversity Policy Guidance

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

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

C.2 Designated Sites and Nature Conservation

C.2.1 Statutory Designated Nature Conservation Sites

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

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

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

C.2.2 Non-Statutory Designations

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

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

C.2.3 Protected and Notable Species

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

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

C.2.4 Birds

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

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

C.2.5 Badger

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

C.2.6 Bats

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

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

C.2.7 Otter

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

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

C.2.8 Reptiles and Amphibians

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

C.2 9 Invasive Non-native Species

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

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

D Habitat Map

E NBDC Records

E.1 Recent records (within 10 years) of protected species within the 10km of the site (National Biodiversity Data Centre, 2021)

Common Name	Latin Name	Date last recorded	Designation
Mammals			
Eurasian Badger	*Meles meles*	14/05/2018	Protected Species: Wildlife Acts
West European Hedgehog	*Erinaceus europaeus*	14/07/2018	Protected Species: Wildlife Acts
Eurasian Red Squirrel	*Sciurus vulgaris*	26/12/2018	Protected Species: Wildlife Acts
Pine Marten	*Martes martes*	01/05/2017	Protected Species: EU Habitats Directive >> Annex V Protected Species: Wildlife Acts
Red Deer	*Cervus elaphus*	09/11/2015	Protected Species: Wildlife Acts
Daubenton's Bat	*Myotis daubentonii*	21/08/2014	Protected Species: EU Habitats Directive >> Annex IV Protected Species: Wildlife Acts
European Otter	*Lutra lutra*	24/08/2014	Protected Species: EU Habitats Directive >> Annex II Protected Species: EU Habitats Directive >> Annex IV Protected Species: Wildlife Acts
Brown Long-eared Bat	*Plecotus auritus*	05/07/2012	Protected Species: EU Habitats Directive >> Annex IV Protected Species: Wildlife Acts
Soprano Pipistrelle	*Pipistrellus pygmaeus*	05/08/2012	Protected Species: EU Habitats Directive >> Annex IV Protected Species: Wildlife Acts
Pipistrelle	*Pipistrellus pipistrellus sensu lato*	15/10/2012	Protected Species: EU Habitats Directive >> Annex IV Protected Species: Wildlife Acts
Lesser Noctule	*Nyctalus leisleri*	18/09/2012	Protected Species: EU Habitats Directive >> Annex IV Protected Species: Wildlife Acts
Natterer's Bat	*Myotis nattereri*	14/09/2011	Protected Species: EU Habitats Directive >> Annex IV Protected Species: Wildlife Acts
Reptiles			
Common Lizard	*Zootoca vivipara*	21/08/2018	Protected Species: Wildlife Acts
Amphibians			
Common Frog	*Rana temporaria*	12/07/2020	Protected Species: EU Habitats Directive >> Annex V Protected Species: Wildlife Acts
Smooth Newt	*Lissotriton vulgaris*	29/06/2020	Protected Species: Wildlife Acts
Birds			

Common Name	Latin Name	Date last recorded	Designation
Common Starling	*Sturnus vulgaris*	08/06/2017	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern - Amber List
Barn Swallow	*Hirundo rustica*	15/09/2017	Protected Species: Wildlife Acts Threatened Species of Conservation Concern - Amber List
House Martin	*Delichon urbicum*	15/09/2017	Protected Species: Wildlife Acts Threatened Species of Conservation Concern - Amber List
Little Egret	*Egretta garzetta*	20/11/2017	Protected Species: Wildlife Acts Protected Species: EU Birds Directive >> Annex I Bird Species
Mallard	*Anas platyrhynchos*	20/11/2017	Protected Species: Wildlife Acts Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section I Bird Species
Common Coot	*Fulica atra*	20/11/2017	Protected Species: Wildlife Acts Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section II Bird Species Threatened Species: Birds of Conservation Concern - Amber List
Tufted Duck	*Aythya fuligula*	20/11/2017	Protected Species: Wildlife Acts Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section II Bird Species Threatened Species: Birds of Conservation Concern - Amber List
Mute Swan	*Cygnus olor*	20/11/2017	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern - Amber List
Black-headed Gull	*Larus ridibundus*	20/11/2017	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern - Red List
Herring Gull	*Larus argentatus*	20/11/2017	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern - Red List
Common Wood Pigeon	*Columba palumbus*	02/08/2016	Protected Species: Wildlife Acts Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section I Bird Species
Common Swift	*Apus apus*	07/05/2016	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern - Amber List

Common Name	Latin Name	Date last recorded	Designation
Sand Martin	*Riparia riparia*	07/05/2016	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern - Amber List
Little Grebe	*Tachybaptus ruficollis*	20/09/2016	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern - Amber List
Common Pheasant	*Phasianus colchicus*	23/03/2016	Protected Species: Wildlife Acts Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section I Bird Species
Eurasian Curlew	*Numenius arquata*	26/12/2016	Protected Species: Wildlife Acts Protected Species: EU Birds Directive >> Annex II, Section II Bird Species Threatened Species: Birds of Conservation Concern - Red List
House Sparrow	*Passer domesticus*	28/04/2016	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern - Amber List
Greylag Goose	*Anser anser*	31/12/2011	Protected Species: Wildlife Acts Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section II Bird Threatened Species: Birds of Conservation Concern - Amber List
Peregrine Falcon	*Falco peregrinus*	31/12/2011	Protected Species: Wildlife Acts Protected Species: EU Birds Directive >> Annex I Bird Species
Common Kingfisher	*Alcedo atthis*	31/12/2011	Protected Species: Wildlife Acts Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern - Amber List
Merlin	*Falco columbarius*	31/12/2011	Protected Species: Wildlife Acts Protected Species: EU Birds Directive >> Annex I Bird Species Threatened Species: Birds of Conservation Concern - Amber List
Whooper Swan	*Cygnus cygnus*	31/12/2011	Protected Species: Wildlife Acts Protected Species: EU Birds Directive >> Annex I Bird Species Threatened Species: Birds of Conservation Concern - Amber List
Rock Pigeon	*Columba livia*	31/12/2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species

Common Name	Latin Name	Date last recorded	Designation
Red Grouse	*Lagopus lagopus*	31/12/2011	Protected Species: Wildlife Acts Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section I Bird Species Threatened Species: Birds of Conservation Concern - Red List
Eurasian Teal	*Anas crecca*	31/12/2011	Protected Species: Wildlife Acts Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section II Bird Species Threatened Species: Birds of Conservation Concern - Amber List
Common Snipe	*Gallinago gallinago*	31/12/2011	Protected Species: Wildlife Acts Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section III Bird Species Threatened Species: Birds of Conservation - Amber List
Eurasian Woodcock	*Scolopax rusticola*	31/12/2011	Protected Species: Wildlife Acts Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section III Bird Species Threatened Species: Birds of Conservation Concern - Amber List
Common Goldeneye	*Bucephala clangula*	31/12/2011	Protected Species: Wildlife Acts Protected Species: EU Birds Directive >> Annex II, Section II Bird Species Threatened Species: Birds of Conservation Concern - Amber List
Northern Lapwing	*Vanellus vanellus*	31/12/2011	Protected Species: Wildlife Acts Protected Species: EU Birds Directive >> Annex II, Section II Bird Species Threatened Species: Birds of Conservation Concern - Red List
Common Kestrel	*Falco tinnunculus*	31/12/2011	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern - Amber List
Common Linnet	*Carduelis cannabina*	31/12/2011	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern - Amber List
Common Sandpiper	*Actitis hypoleucos*	31/12/2011	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern - Amber List

Common Name	Latin Name	Date last recorded	Designation
Eurasian Tree Sparrow	*Passer montanus*	31/12/2011	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern - Amber List
Great Cormorant	*Phalacrocorax carbo*	31/12/2011	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern - Amber List
Great Crested Grebe	*Podiceps cristatus*	31/12/2011	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern - Amber List
Lesser Black-backed Gull	*Larus fuscus*	31/12/2011	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern - Amber List
Mew Gull	*Larus canus*	31/12/2011	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Amber List
Northern Wheatear	*Oenanthe oenanthe*	31/12/2011	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern - Amber List
Sky Lark	*Alauda arvensis*	31/12/2011	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation - Amber List
Spotted Flycatcher	*Muscicapa striata*	31/12/2011	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern - Amber List
Yellowhammer	*Emberiza citrinella*	31/12/2011	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern - Red List
Invertebrates			
Freshwater White-clawed Crayfish	*Austropotamobius pallipes*	19/08/2013	Protected Species: EU Habitats Directive >> Annex II Protected Species: EU Habitats Directive >> Annex V Protected Species: Wildlife Acts
Small Heath	*Coenonympha pamphilus*	30/05/2020	Threatened Species: Near threatened
Large Red Tailed Bumble Bee	*Bombus Melanobombus lapidarius*	24/07/2020	Threatened Species: Near threatened
Megachile	*Delomegachile willughbiella*	01/08/2019	Threatened Species: Near threatened
Moss Carder-bee	*Bombus Thoracombus muscorum*	28/07/2019	Threatened Species: Near threatened
Lasioglossum	*Dialictus smeathmanellum*	07/08/2018	Threatened Species: Data deficient
Plants			
Lamiastrum galeobdolon subsp. montanum	Lamiastrum galeobdolon subsp. montanum	20/04/2020	Threatened Species: Vulnerable
Blue Fleabane	*Erigeron acer*	26/07/2017	Threatened Species: Endangered

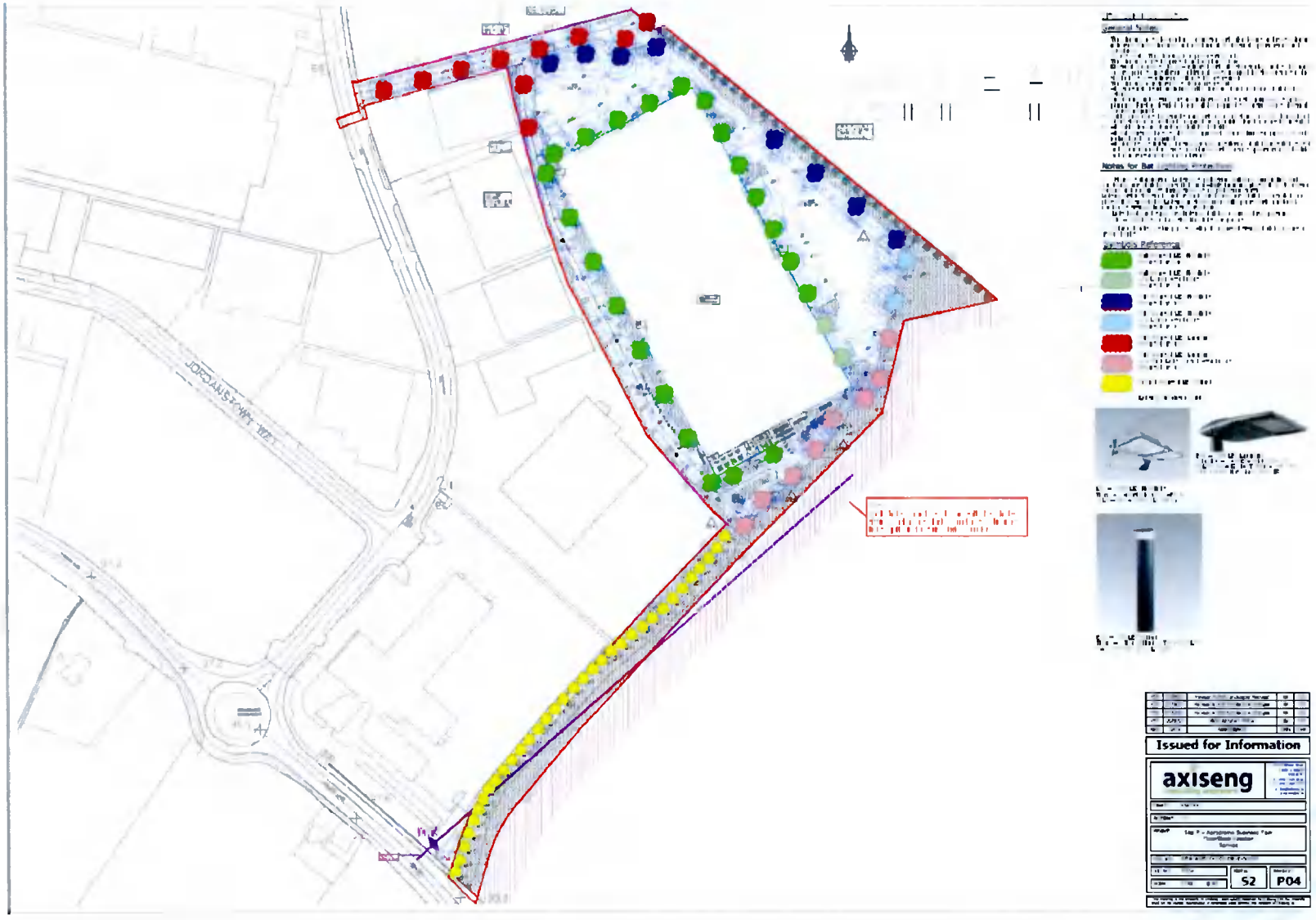
Common Name	Latin Name	Date last recorded	Designation
Bifid Crestwort	*Lophocolea bidentata*	07/02/2012	Threatened Species: Least concern
Endive Pellia	*Pellia endiviifolia*	21/04/2012	Threatened Species: Least concern
Great Scented Liverwort	*Conocephalum conicum*	21/04/2012	Threatened Species: Least concern
Big Shaggy-moss	*Rhytidiadelphus triquetrus*	07/02/2012	Threatened Species: Least concern
Fallacious Beard-moss	*Didymodon fallax*	07/02/2012	Threatened Species: Least concern
Springy Turf-moss	*Rhytidiadelphus squarrosus*	07/02/2012	Threatened Species: Least concern
Wall Screw-moss	*Tortula muralis*	07/02/2012	Threatened Species: Least concern
Bristly Fringe-moss	*Racomitrium heterostichum*	11/11/2012	Threatened Species: Least concern
Starry Hoar-moss	*Hedwigia stellata*	11/11/2012	Threatened Species: Least concern
Fern-leaved Hook-moss	*Cratoneuron filicinum*	21/04/2012	Threatened Species: Least concern
Neat Feather-moss	*Scleropodium purum*	21/04/2012	Threatened Species: Least concern
Olive Beard-moss	*Didymodon tophaceus*	21/04/2012	Threatened Species: Least concern
Pink-fruited Thread-moss	*Pohlia melanodon*	21/04/2012	Threatened Species: Least concern
Pointed Spear-moss	*Calliergonella cuspidata*	21/04/2012	Threatened Species: Least concern
River Feather-moss	*Brachythecium rivulare*	21/04/2012	Threatened Species: Least concern
Thick-nerved Apple-moss	*Philonotis calcarea*	21/04/2012	Threatened Species: Least concern
Variable Forklet-moss	*Dicranella varia*	21/04/2012	Threatened Species: Least concern
Whorled Tufa-moss	*Eucladium verticillatum*	21/04/2012	Threatened Species: Least concern
Bird's-claw Beard-moss	*Barbula unguiculata*	05/04/2011	Threatened Species: Least concern
Schreber's Forklet-moss	*Dicranella schreberiana*	05/04/2011	Threatened Species: Least concern
Common Cord-moss	*Funaria hygrometrica*	14/03/2011	Threatened Species: Least concern
Hart's-tongue Thyme-moss	*Plagiomnium undulatum*	26/04/2011	Threatened Species: Least concern
Tall Thyme-moss	*Plagiomnium elatum*	26/04/2011	Threatened Species: Least concern

E 2 Recent records (within 10 years) of invasive non-native species within the 10km of the site (National Biodiversity Data Centre, 2021)

Species name	Date of last record	Designation
Greylag Goose (*Anser anser*)	31/12/2011	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland) || Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section II Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Douglas Fir (*Pseudotsuga menziesii*)	16/08/2020	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species
American Skunk-cabbage (*Lysichiton americanus*)	05/04/2020	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species || Invasive Species: Invasive Species >> EU Regulation No. 1143/2014 || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Butterfly-bush (*Buddleja davidii*)	29/07/2019	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species
Cherry Laurel (*Prunus laurocerasus*)	10/04/2020	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species
Fringed Water-lily (*Nymphoides peltata*)	15/06/2016	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Giant Knotweed (*Fallopia sachalinensis*)	01/12/2017	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Himalayan Balsam (*Impatiens glandulifera*)	31/12/2017	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Japanese Knotweed (*Reynoutria japonica*)	11/09/2019	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Rhododendron ponticum	21/05/2020	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Sycamore (*Acer pseudoplatanus*)	15/05/2020	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species
Three-cornered Garlic (*Allium triquetrum*)	30/05/2020	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Wild Parsnip (*Pastinaca sativa*)	11/07/2015	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species

Species name	Date of last record	Designation
Brown Rat (*Rattus norvegicus*)	09/10/2015	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Eastern Grey Squirrel (*Sciurus carolinensis*)	31/12/2017	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> EU Regulation No. 1143/2014 || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
European Rabbit (*Oryctolagus cuniculus*)	19/10/2018	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species
Fallow Deer (*Dama dama*)	20/12/2016	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland) || Protected Species: Wildlife Acts
Greater White-toothed Shrew (*Crocidura russula*)	26/03/2020	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species
Sika Deer (*Cervus nippon*)	02/11/2016	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland) || Protected Species: Wildlife Acts

F Lighting Design



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