ENVIRONMENTAL SOLUTIONS LTD

Panther Environmental Solutions Ltd
Units 3 & 4, Innovation Centre
Institute of Technology
Green Road, Carlow
Ireland
R93 W248

Telephone: 059-9134222
Email: info@pantherwms.com
Website: www.pantherwms.com

ECOLOGICAL IMPACT ASSESSMENT

CLONDALKIN RUGBY FOOTBALL CLUB LTD
DUBLIN 22

2021

REPORT NO:	PES_EcIA_21349	**AUTHOR:**	Ross Donnelly-Swift, PhD.
DATE:	9th December 2021	**REVIEWED:**	Mike Fraher, BSc.

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1.0 INTRODUCTION

This report has been prepared by Panther Environmental Solutions Ltd. to accompany an application for planning permission to South Dublin County Council by the applicant, Clondalkin Rugby Football Club Ltd. for the proposed redevelopment of agricultural land into sports pitches, training facilities and changing rooms, clubhouse, car and bus parking with all associated site works and landscaping works. The proposed site is located at Kingswood Farm, Baldonnell, Dublin 22.

The scope of this study is to assess whether significant impacts on protected flora and fauna with a particular emphasises on protected species found within the proposed development and with cognizance for National Heritage Areas (NHAs) and to identify and/or mitigate any potential significant effects on protected species. This report has been prepared with regards to the European Communities (Natural Habitats) Regulations 1997 (S.I. No. 94 of 1997), and the later amendment regulations (S.I. No. 233 of 1998; S.I. No. 237 of 2005).

A study was undertaken by Dr Ross Donnelly-Swift (BSc (Hons) Biology, MSc Environmental Science, PhD Biosystems Engineering) of Panther Environmental Solutions Limited. This comprised a review of the proposed development, a site assessment on the 26th of November 2021 to examine the ecological context of the proposed development, a desk study of the information on protected species, habitats and sites within the vicinity of the development for the potential impacts.

2. LEGISLATIVE CONTEXT

The following legislation is relevant to the proposed development and biodiversity:

- The Wildlife Act is the primary piece of Irish legislation providing for the protection and conservation of wildlife and provides for the control of specific activities which could adversely affect wildlife, for example the regulation of hunting and wildlife trading. Under the Wildlife Act, all bird species, 22 other fauna species and 86 flora species in Ireland are afforded protected status. The Wildlife Act, 1976 allows for the designation of specific areas of ecological value such as Statutory Nature Reserves and Refuges for Fauna. The Wildlife (Amendment) Act, 2000 provides for greater protection and conservation of wildlife and also provides for the designation and statutory protection of Natural Heritage Areas (NHA). European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. No. 477 of 2011) and (Amendment) Regulations, 2015 (S.I. No. 355 of 2015), transposing the Habitats Directive 92/43/EEC (as amended) and Birds Directive 2009/147/EC.
- The Flora (Protection) Order, 2015 (S.I. No. 356 of 2015). This order provides statutory protection to flora listed in Section 21 of the Wildlife Act, 1976 and Wildlife (Amendment) Act, 2000. Under the Order, it is illegal to wilfully cut, uproot or damage the listed species or interfere in any way with their habitats.
- National Biodiversity Plan 2017-2021. Ireland's third National Biodiversity Plan 2017–2021, identifies actions towards understanding and protecting biodiversity with a vision that, "*biodiversity and ecosystems in Ireland are conserved and restored, delivering benefits essential for all sectors of society and that Ireland contributes to efforts to halt the loss of biodiversity and the degradation of ecosystems in the EU and globally*". A

number of Local Biodiversity Action Plans have been prepared, and it is noted that the South Dublin County Development Plan (CDP) includes a policy to carry out a Biodiversity Plan during the lifetime of the CDP.

- National Biodiversity Data Centre All-Ireland Pollinator Plan 2021-2025. This plan has six objectives (i) Making farmland pollinator friendly, (ii) Making public land pollinator friendly, (iii) Making private land pollinator friendly, (iv) All-Ireland Honeybee Strategy, (v) Conserving rare pollinators (vi) Strategic coordination of the Plan.
- Water Framework Directive (2000/60/EC). The Water Framework Directive (WFD) aims to improve the water environment (including groundwater, rivers, lakes, estuaries and coastal waters) of E.U. Member States. The aim of the WFD is for Member States to achieve and maintain "good status" in all water bodies.
- South Dublin County Development Plan 2016-2022. Under these regulations, development plans must include mandatory objectives for the conservation of natural heritage and for the conservation of European sites.

3. METHODOLOGY

This EcIA has been carried with reference to the following guidelines:

- *Appropriate Assessment of Plans and Projects in Ireland. Guidelines for Planning Authorities*. DoEHLG, 2009.
- Ecological Guidance for Local Authorities and Developers (Scott Cawley, 2013)
- *Managing Natura 2000 sites – The Provisions of Article 6 of The Habitats Directive 92/43/EEC.* European Commission, 2000.
- NRA (2009) *Guidelines for Assessment of Ecological Impacts of National Road Schemes* (National Roads Authority)
- *Assessment of Plans and Projects Significantly Affecting Natura 2000 sites. Methodological Guidance on the Provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC.* European Commission, 2002.
- Commission Notice "Managing Natura 200 sites, The provisions of Article 6 of the Habitats Directive 92/43/EEC. European Commission, 21.11.2018
- CIEEM (2018) *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal*, 2nd edition. Chartered Institute of Ecology and Environmental Management, Winchester.
- *The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads* (National Roads Authority (NRA), 2010);
- *Guidelines for the Treatment of Badgers prior to the Construction of National Road Schemes* (NRA, 2006a);
- *Guidelines for the Treatment of Otters prior to the Construction of National Road Schemes* (NRA, 2006b);

- *Guidelines for the Treatment of Bats during the Construction of National Road Schemes* (NRA, 2006c);
- *Bat Mitigation Guidelines for Ireland* (Kelleher and Marnell, 2006);

3.1 DESKTOP RESEARCH

Every effort has been made to provide an accurate assessment of the situation pertaining to the site. However, an ecological survey can only assess a site at a particular time and is limited by various factors such as the season, timing of the survey, climatic conditions and species behaviour. Ecological surveys are therefore snapshots in time and should not be regarded as a complete study. Direct observations or evidence of protected species is not always recorded during ecological surveys. However, this does not indicate that the species is absent from the site. To ensure any limitations encountered did not significantly impact upon the findings of the ecological assessments, the ecological surveys undertaken also assessed the potential of the habitats to support protected species, and cognisance has been taken of available online baseline data (e.g. flora and fauna records from the NBDC, previous surveys undertaken by Wildlife Surveys) and a precautionary approach taken.

Desktop research was carried out to gather information on the ecology of the site and surrounding areas. The locations of the Natura 2000 sites, National Heritage Areas (NHAs), Nature Reserves, National Parks and protected flora and fauna records for the proposed development at Kingswood Farm, Baldonnell, Dublin 22.

Water quality data from the EPA was reviewed for the assessment of biological and environmental data collected on waterbodies in Ireland (Water Quality in Ireland 2013-2018 (2020)).

Biological records from the National Biodiversity Data Centre (NBDC) for the site and surrounding area (10km grid square/tetrad) were reviewed and account taken of notable species including any rare, protected, threatened and invasive species.

Information on the characteristics of the Natura 2000 sites within the potential zone of influence was reviewed from the conservation objectives documents, site synopses and Standard Natura 2000 data forms available on the NPWS website.

3.2 SITE SURVEY

A site characterisation assessment was undertaken on the 26th of November 2021 to examine the ecological context of the development site, by systematically walking the site, adjacent land and boundaries and determining the habitats present. The habitat survey was undertaken in accordance with the standard methodology outlined in Fossitt's "*A Guide to Habitats in Ireland*", a hierarchical classification scheme based upon the characteristics of vegetation present. The Fossitt system also indicates when there are potential links with Annex I habitats of the E.U. Habitats Directive (92/43/EEC). Cognisance was also taken of the Heritage Council guidelines, "*Best Practice Guidance for Habitat Survey and Mapping*", (Smith *et al.*, 2011). Bird species and signs of fauna activity and dwellings were also noted. Particular attention was given to the possible presence of habitats and/or species, which are legally protected under

Irish and European legislation and to assessing any potential ecological connectivity with Natura 2000 sites or supplementary or steppingstone habitats of relevance to Natura 200 sites. General bird and fauna usage of the development site was assessed on the 26th of November 2021. While walking the development site, stops were undertaken on a regular basis during which time the area was scanned as far as the terrain or weather conditions allowed. Birds were identified by visual sightings and auditory identification of songs and calls. Birds flying overhead were also included as part of the survey.

3.3 BAT SURVEY

Bat Survey

Areas within the proposed development site at the Kingswood Farm with the potential to support bat roosts and / or foraging / commuting routes, and which have the potential to be impacted upon by the proposed development were the main focus of this survey.

A daytime assessment of individual trees, treelines and hedgerows within the proposed development site potentially affected by the proposed development was undertaken on the 26th of November 2021.

The assessment comprised of an external inspection of trees to identify potential roost features (PRFs) and evidence of bat activity. The criteria used to categorise the PRFs or suitability of trees as a potential roost are summarised in the table below, based upon the guidelines by Collins (2016) and Hundt (2012).

A dawn/dusk survey of commuting/foraging bats was not completed as part this assessment as the optimal season for observing active bats is from March – October with weather conditions not optimal for a winter survey (temperature range was 2-7°C, wind 25-40km/h with thundery showers).

Table 3.1: Bat Roost Potential Categories

CATEGORY	DESCRIPTION
High Trees that are suitable for use by large numbers of bats on a regular basis	Features include holes, cracks or crevices that extend or appear to extend back to cavities suitable for bats. In trees, examples include hollows and cavities, rot holes, cracks/splits and flaking or raised bark which could provide roosting opportunities. Any ivy cover is sufficiently well-established and matted so as to create potential crevices beneath. **Further survey work would be required to determine whether or not bats are present, and if so, the species present. Appropriate mitigation and potential licensing requirements may then be determined.**
Moderate Moderate potential is assigned to trees with potential to support bat roosts	From the ground, tree appears to have features (e.g. holes, cavities, cracks or dense ivy cover) that may extend back into a cavity. However, owing to the characteristics of the feature, they are deemed to be sub-optimal for roosting bats.

CATEGORY	DESCRIPTION
but supports fewer features than a high potential tree and is unlikely to support a roost of high conservation value.	**Further survey work would be required to determine whether or not bats are present, and if so, the species present. Appropriate mitigation and potential licensing requirements may then be determined.**
Low Low potential is assigned to trees with features that could support individual bats opportunistically.	If no features are visible, but owing to the size, age and/or structure, hidden features, sub-optimal for roosting bats, may occur that only an elevated inspection may reveal. In respect of ivy cover, this is not dense (i.e. providing PRF in itself) but may mask presence of PRF features. **Works may proceed using reasonable precautions (e.g. controlled working methods, under license or supervision of a bat worker).**

4.0 DESCRIPTION OF PROPOSED DEVELOPMENT AND EXISTING SITE

4.1 PROPOSED DEVELOPMENT

The proposed development of the site will be the redevelopment of agricultural land into sports pitches. Existing industrial/agricultural buildings within the site boundary will be redeveloped for club facilities such as training facilities and 4 No. changing rooms. Also, as part of the proposed development will be a new two-story Clubhouse Pavilion, 117 car and 3 bus parking spaces, amenities, and a playground in addition to all associated site works and landscaping works. Vehicular access will be from the Baldonnel Road (L2001) approximately 810m from Grange Castle Road (L1021). Some minor demolition work will take place to improve site access.

As part of the development a new waste water treatment system will be installed and a drainage network with attenuation system for stormwater. Additional site entrance onto the local access road. The proposed site is located at Kingswood Farm, Baldonnell, Dublin 22. See Figure 4.2 below.

To create playing fields the areas of agricultural grassland will be resown with grass species specifically grown for pitches such as Ryegrasses (*Lolium* spp.) and Fescue (*Festuca* spp.) with the removal and/or treatment of deep-rooted recolonising flora such as Broad-leaved Dock (*Rumex obtusifolius*) and Dandelion (*Taraxacum* spp.). Pitch development involves rolling, seeding and cutting. Once the grass pitch is established it can be marked out and posts erected. Field levels will be unchanged. Vegetation cover of the overall site is shown in imagery captured in 2009 and 2020. See Figure 4.2 below

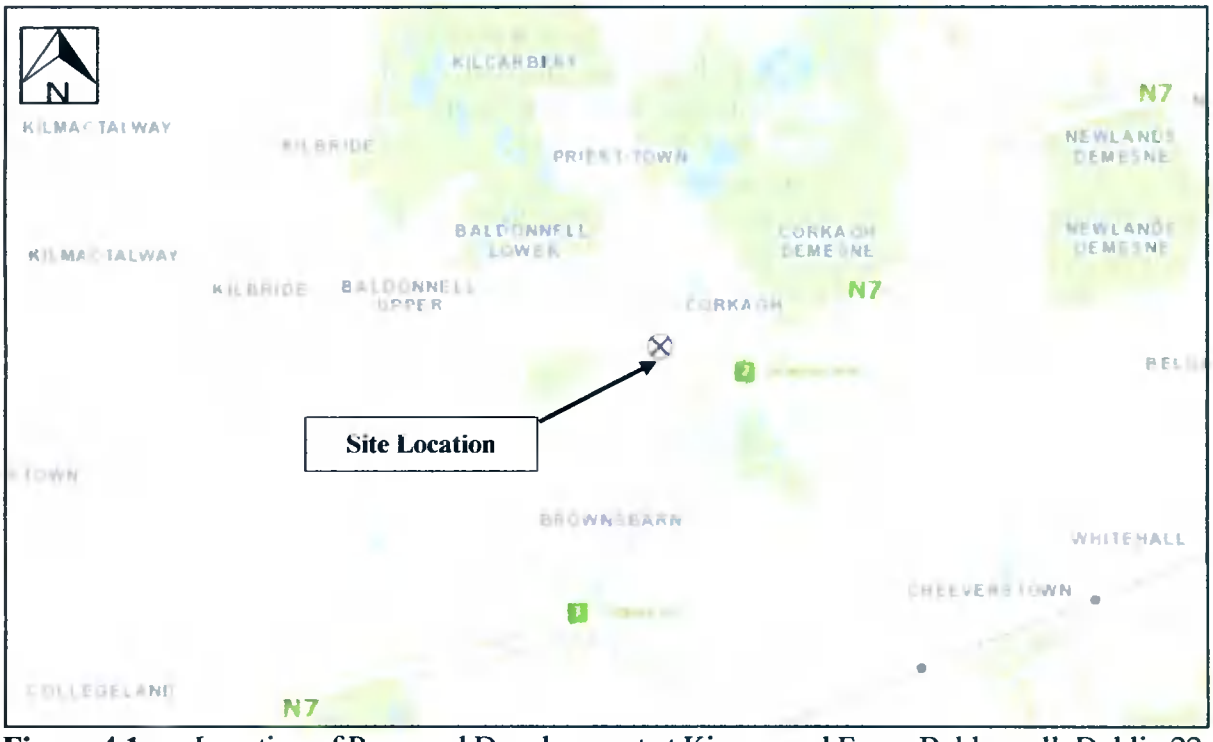

Figure 4.1: Location of Proposed Development at Kingswood Farm, Baldonnell, Dublin 22

Figure 4.2: Vegetation at the proposed site (i) 2009 (ii) 2021 (Source Google Imagery) within the boundary of the proposed development.

4.2 EXISTING ENVIRONMENT

During the site survey seven habitats were identified;

Recolonising Bare Ground (ED3)
Within the site is recolonising bare ground (ED3) habitat. The dominant species found here are Buttercup (*Ranunculus* spp.), Clover (*Trifolium* spp.), Sow-thistle (*Sonchus* spp.), Dock (*Rumex* spp.), Nettle (*Urtica dioica*), Rape (*Brassica napus*), Greater Plantain (*Plantago major*), Ragwort (*Senecio jacobaea*), Dandelion (*Taraxacum* spp.), Annual Meadow-grass (*Poa annua*), Pineappleweed (*Matricaria discoidea*), Fat-hen (*Chenopodium album*) and Poppy (*Papaver* spp.).

Figure 4.2.1 Recolonising Bare Ground (ED3)

Buildings and Artificial Surfaces (BL3)

Large areas of concrete and the outbuildings/sheds site are classified as buildings and artificial surfaces (BL3) habitat with few flora species present such as Moss (*Bryophyta*), Groundsel (*Senecio vulgaris*), Ivy (*Hedera helix*), Annual Meadow-grass (*Poa annua*) and Dandelion (*Taraxacum* spp.). Additional seedlings of flora found in ED3 habitat.

Figure 4.2.3 Buildings and Artificial Surfaces (BL3)

Hedgerows (WL1) and Treelines (WL2)

Along the field boundaries are hedgerows (WL1) and treelines (WL2) habitats with tree species Ash (*Fraxinus excelsior*), Sycamore (*Acer pseudoplatanus*), Blackthorn (*Prunus spinosa*), Hawthorn (*Crataegus monogyna*), Elder (*Sambucus nigra*), Horse-chestnut (*Aesculus hippocastanum*) and Willow (*Salix* spp.). Other species found in this habitat are Holly (*Ilex aquifolium*), Dog-rose (*Rosa canina agg.*), Bramble (*Rubus fruticosus*), Ivy (*Hedera helix*), Cleavers (*Galium aparine*), Nettle (*Urtica dioica*), Hogweed (*Heracleum sphondylium*), Lesser Burdock (*Arctium minus*), Hedge Mustard (*Sisymbrium officinale*), Herb-Robert (*Geranium robertianum*), Primrose (*Primula vulgaris*), Tutsan (*Hypericum androsaemum*), Vetch (*Vicia* spp.), Violet (*Viola* spp.), Hart's Tongue Fern (*Asplenium scolopendrum*), Moss (*Bryophyta*) and Privet (*Ligustrum* sp.).

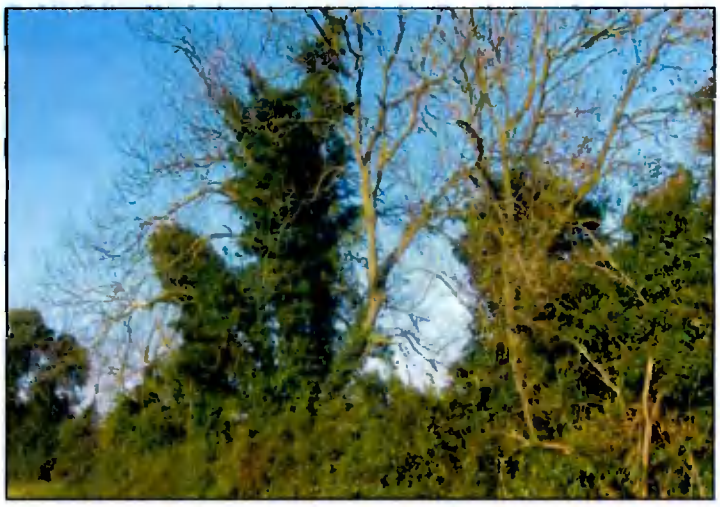

Figure 4.2.2 Hedgerows (WL1) and Treeline (WL2) habitats

Mixed broadleaved/conifer woodland (WD2)

Mixed broadleaved/conifer woodland (WD2) habitat is found along the boundary with the N7 slip road and L1021 with Ash (*Fraxinus excelsior*), Birch (*Betula* spp.), Hazel (*Corylus avellana*), Scot's Pine (*Pinus sylvestris*), Willow (*Salix* spp.), Guelder-rose (*Viburnum opulus*), Hawthorn (*Crataegus monogyna*) with Ivy (*Hedera helix*) and Bramble (*Rubus fruticosus*).

Figure 4.2.3 Mixed broadleaved/conifer woodland (WD2)

Improved Agricultural Grassland (GA1)

This habitat is the found in the fields to the north and southeast of the site. The flora found here include Ryegrasses (*Lolium* spp.), Bent grasses (*Agrostis* spp.), Meadow-grasses (*Poa* spp.), False Oat-grass (*Arrhenatherum elatius*), Creeping Buttercup (*Ranunculus repens*), Clover (*Trifolium* spp.), Creeping Thistle *(Cirsium arvense*), Common Mouse-ear (*Cerastium fontanum*), Daisy (*Bellis perennis*), Dandelion (*Taraxacum* spp.), Broad-leaved Dock (*Rumex obtusifolius*), Shepherd's-purse (*Capsella bursa-pastoris*), Spear Thistle (*Cirsium vulgare*), Sow-thistle (*Sonchus* spp.) and Nettle (*Urtica dioica*).

Figure 4.2.4 Agricultural grassland (GA1)

Improved Amenity Grassland (GA2)

This habitat is found along the middle field south of the Camac River. The grass species are Ryegrasses (*Lolium* spp.) and Fescue (*Festuca* spp.) with Clover (*Trifolium* spp.), Common Chickweed (*Stellaria media*) and Common Fumitory (*Fumaria officinalis*).

Figure 4.2.5 Improved Amenity grassland (GA2)

Depositing/lowland rivers (FW2)

The Camac River is classified as depositing/lowland rivers (FW2) habitat. The flora found here include Water-cress (*Rorippa nasturtium-aquaticum*), Lesser Water-parsnip (*Berula erecta*), Brooklime (*Veronica beccabunga*), Rushes (*Juncus* spp.), Moss (*Fontinalis* spp.) with Hemlock (*Conium maculatum*), Buckler-fern (*Dryopteris* spp.) and Willowherb (*Epilobium* spp.) along the banks.

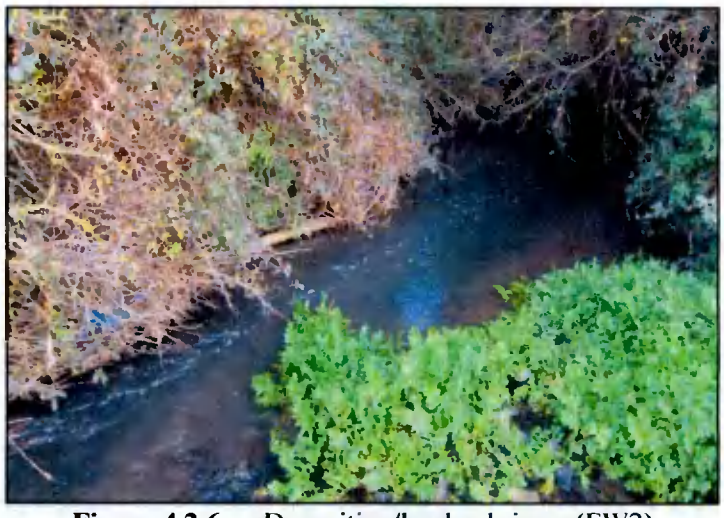

Figure 4.2.6 Depositing/lowland rivers (FW2)

Drainage Ditches (FW4)

Along the southwest boundary is drainage ditch (FW4) habitat (Baldonnell Upper). The flora found here include are similar to FW1.

Figure 4.2.7 Drainage Ditches (FW4)

Table 4.1 Habitats found in and along boundary of the development site

HABITAT CLASSIFICATION HIERARCHY		
LEVEL 1	**LEVEL 2**	**LEVEL 3**
B – Cultivated and built land	**BL** – Built Land	**BL3** – Buildings and artificial surfaces
E – Exposed rock and disturbed ground	**ED** – Disturbed ground	**ED3** – Recolonising bare ground
F – Freshwater	**FW** – Watercourses	**FW2** – Depositing/lowland rivers
		FW4 – Drainage ditches
G – Grassland and marsh	**GA** – Improved grassland	**GA1** – Improved agricultural grassland
		GA2 – Amenity grassland (improved)
W – Woodland and scrub	**WS** – Highly modified/ non-native woodland	**WD2** - Mixed broadleaved/conifer woodland
	WL – Linear woodland / scrub	**WL1** – Hedgerows
		WL2 – Treelines

Table 4.2 Ecological Value of Identified Habitats at the Proposed Development

HABITAT TYPE	HABITAT RATING	KEY ECOLOGICAL RECEPTOR?
Drainage ditch (FW4)	Local importance, lower value	Yes. Modified habitat but would provide habitat for invertebrates.
Depositing/lowland rivers (FW2)	Local importance, higher value	Yes. Important habitat for invertebrates such as White-clawed crayfish.
Mixed broadleaved/conifer woodland (WD2)	Local importance, lower value	Yes. May provide opportunities for bird nesting and foraging for bats.
Hedgerows (WL1)	Local importance, lower value	Yes. May provide opportunities for bird nesting and foraging for bats.
Treelines (WL2)	Local importance, lower value	Yes. May provide opportunities for bird nesting and foraging for bats.
Amenity grassland (improved) (GA2)	Local importance, lower value	No. Modified habitat, low ecological value.
Improved agricultural grassland (GA1)	Local importance, lower value	No. Modified habitat, low ecological value.
Recolonising bare ground (ED3)	Local importance, lower value	No. Modified habitat, low ecological value.
Buildings and artificial surfaces (BL3)	Local importance, lower value	No. Comprised of artificial surfaces, low ecological value.

Figure 4.3 Habitat Map

4.3 HYDROLOGIC CONNECTIVITY

The proposed development is located within the Liffey and Dublin Bay Catchment (ID 09). Watercourses located near the proposed development are the River Camac (EPA code: 09C02 - Order 4) which joins the River Liffey (EPA code: 09L01 - Order 6), approximately 15km downstream at Sean Heuston Bridge. The River Liffey is tidal at this location. The River Liffey then flows in an easterly direction for a further 7.55km until it flows into Dublin Bay. As the River Liffey flows into Dublin Bay it also flows into the South Dublin Bay and River Tolka Estuary SPA and the South Dublin Bay SAC. The Baldonnell Upper (EPA code: 09B91 - Order 2) flows along the southwest boundary of the site and joins the Camac River at the northwest corner of the proposed site. See Figure 4.4 for watercourses within the vicinity of the site. Protected aquatic habitats and species are summarised in Section 6 below.

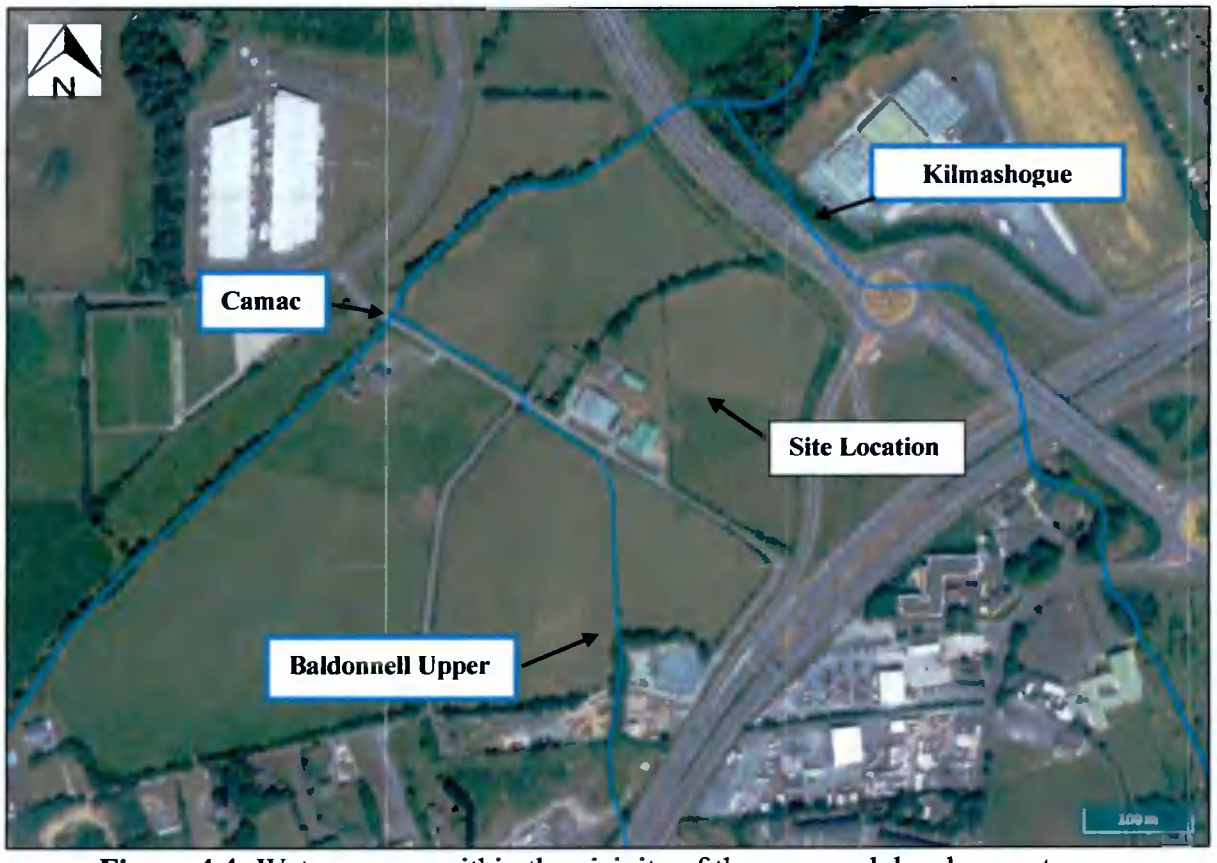

Figure 4.4: Watercourses within the vicinity of the proposed development

The Environmental Protection Agency (EPA) undertake surface water monitoring along the Camac River. The results for the nearest monitoring stations with available information (as per Table 4.2) for the period 1998 – 2019 are summarised in Figure 4.4 below for indicative purposes. As can be seen in Figure 4.4 below, the Camac River is mainly achieving a water quality status of between Q3 (poor) to Q3-4 (moderate) in recent years. Note that station RS09C020500 recorded (2/0) in 2005 and (3/0) in 2010, station RS09C020250 recorded (3/0) in 2007 this indicates a toxic effect is apparent or suspected. EPA comments on the most recent monitoring results for the Camac River are as follows "*The Camac was found to be at unsatisfactory conditions in August 2019. Poor ecological conditions recorded at 0100, 0310 and 0500, with 0100 (Saggart) declining from Good conditions in 2016. Moderate conditions were maintained at 0200 (Brownsbarn).*"

Table 4.2: Monitoring Stations on the River Camac within the vicinity of the development

STATION NO.	STATION LOCATION	EASTING	NORTHING	APPROX. LOCATION RELATIVE TO SITE
RS09C020250	Br SE of Baldonnell Ho	304913	229242	At site boundary
RS09C020310	Riversdale Estate Br	307222	231611	3.68km downstream
RS09C020500	Camac Close Emmet Rd	311965	233446	13km downstream

EPA Monitoring on the River Camac within the Vicinity of the Proposed Development

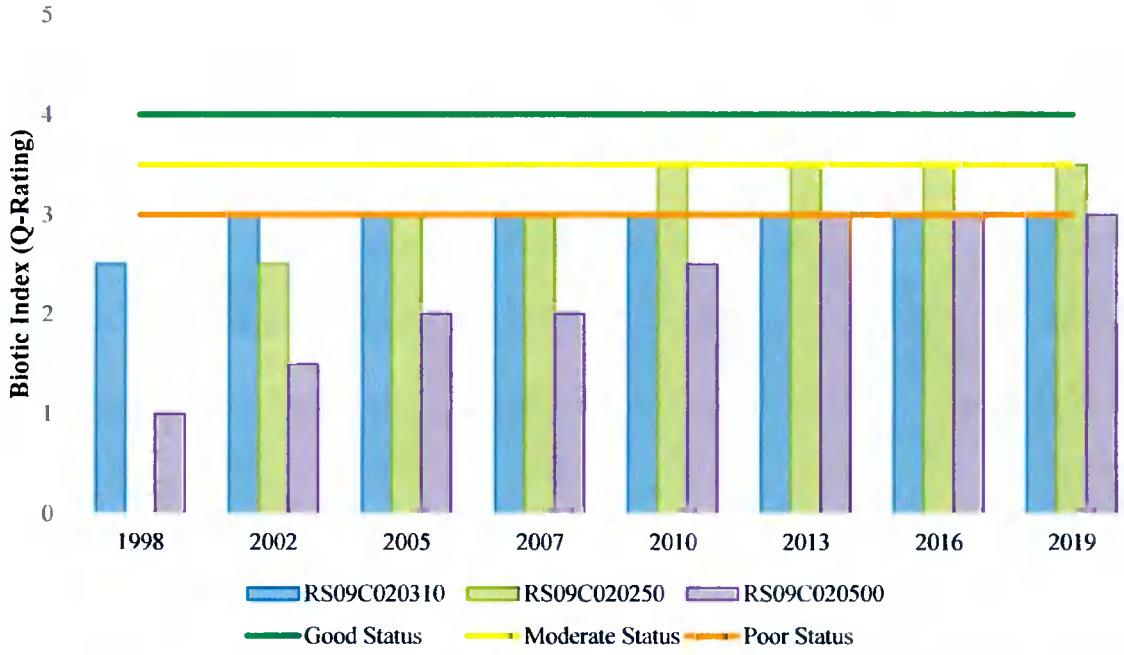

Figure 4.4: EPA Ecological Monitoring of the Camac River from 1998 – 2019

Table 4.3: Status of Transitional and Coastal Waterbodies

TRANSITIONAL AND COASTAL WATERBODIES				
NAME	ID	TYPE	STATUS	DISTANCE
Liffey Estuary Lower	IE_EA_090_0300	Transitional	Review - Good	8.5km NE
Tolka Estuary	IE_EA_090_0200	Transitional	At risk - Moderate	14.2km NE
Dublin Bay	IE_EA_090_0000	Coastal	Not at risk - Good	14.5km NE
North Bull Island	IE_EA_090_0100	Transitional	Review - Unassigned	19km NE
Irish Sea Dublin (HA 09)	IE_EA_070_0000	Coastal	Not at risk - Good	21km E
Southwestern Irish Sea - Killiney Bay (HA10)	IE_EA_100_0000	Coastal	Not at risk - Good	22km E

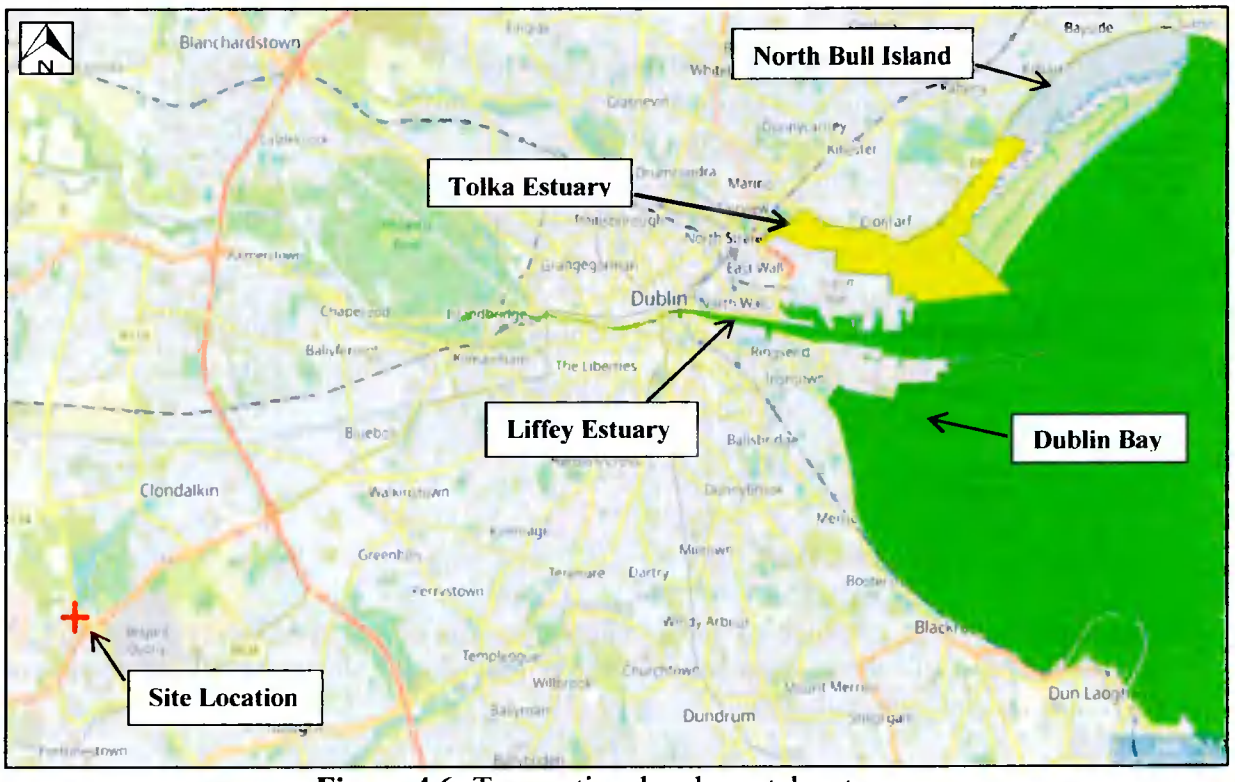

Figure 4.6: Transnational and coastal waters

4.5 INVASIVE SPECIES

Under Regulation 49(2) of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011), save in accordance with a licence granted under paragraph (7), any person who plants, disperses, allows or causes to disperse, spreads or otherwise causes to grow in any place specified in relation to any plant which is included in Part 1 of the Third Schedule shall be guilty of an offence.

Materials containing invasive species such as Japanese Knotweed are considered "controlled waste", and, as such, there are legal restrictions on their handling and disposal. Under Regulation 49(7) of the European Communities (Birds and Natural Habitats) Regulations 2011, it is a legal requirement to obtain a license to move "vector materials" listed in the Third Schedule, Part 3.

During the site assessment no invasive plant species listed in the Third Schedule of the European Communities Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011) were recorded. Other invasive species recorded within the site;

Other Invasive Species	Habitat
Sycamore (*Acer pseudoplatanus*)	WL1/WL2
Winter Heliotrope (*Petasites fragrans*)	WL1

Nine invasive plant species listed in the Third Schedule of the European Communities Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011) were recorded within the 10km square;

Third Schedule Invasive Species	Tetrad
Three-cornered Garlic (*Allium triquetrum*)	O02
Rhododendron ponticum	O02
New Zealand Pigmyweed (*Crassula helmsii*)	O02
American Skunk-cabbage (*Lysichiton americanus*)	O02
Curly Waterweed (*Lagarosiphon major*)	O02
Fringed Water-lily (*Nymphoides peltata*)	O02
Giant Hogweed (*Heracleum mantegazzianum*)	O02
Giant Knotweed (*Fallopia sachalinensis*)	O02
Japanese Knotweed (*Fallopia japonica*)	O02

5. PROTECTED SPECIES

Developments have the potential to impact upon terrestrial and aquatic biodiversity through destruction and loss of habitat, disturbance due to noise and dust, the potential introduction of invasive species and light pollution.

5.1 BIRDS

Given the urban land use of the surrounding area it would be expected that common garden bird species would be present in the area. Bird species noted during the site assessment are included in the table below;

COMMON NAME	SCIENTIFIC NAME	E.U. BIRDS DIRECTIVE	BoCCI* RED LIST	BoCCI* AMBER LIST
Blackbird	*Turdus merula*	-	-	-
Blue Tit	*Parus caeruleus*	-	-	-
Chaffinch	*Fringilla coelebs*	-	-	-
Dunnock	*Prunella modularis*	-	-	-
Goldfinch	*Carduelis carduelis*	-	-	-
Great Tit	*Parus major*	-	-	-
Greenfinch	*Carduelis chloris*	-	-	-
Grey Heron	*Ardea cinerea*	-	-	-
Herring Gull	*Larus argentatus*	-	✓	-
Hooded Crow	Corvus cornix	-	-	-
House Sparrow	*Passer domesticus*	-	-	✓
Jackdaw	*Corvus monedula*	-	-	-
Lesser Black-backed Gull	*Larus fuscus*	-	-	✓
Magpie	*Pica pica*	-	-	-
Mallard	*Anas platyrhynchos*	-	-	✓
Mistle Thrush	*Turdus viscivorus*	-	-	-
Moorhen	*Gallinula chloropus*	-	-	-
Pheasant	*Phasianus colchicus*	-	-	-
Pied Wagtail	*Motacilla alba*	-	-	-
Robin	*Erithacus rubecula*	-	-	-

Common Name	Scientific Name	E.U. Birds Directive	BoCCI* Red List	BoCCI* Amber List
Rook	*Corvus frugilegus*	-	-	-
Sparrowhawk	*Accipiter nisus*	-	-	-
Woodpigeon	*Columba palumbus*	-	-	-
Wren	*Troglodytes troglodytes*	-	-	-

**The BoCCI (Birds of Conservation Concern in Ireland) List classifies bird species into one of three lists (Red, Amber or Green) based on their conservation status and conservation priority.*

All of the birds were observed within the grassland and hedgerow/trees of the site. With Lesser Black-backed Gull, Herring Gull, Mallard and Grey Heron observed flying over the site. Herring Gull is red listed under the BoCCI classification and House Sparrow, Lesser Black-backed Gull and Mallard are amber listed. None of the bird species recorded are listed under Annex I of the E.U. Birds Directive.

Bird records for the previous thirty years were reviewed on the NBDC website for the 10km square in which the proposed development is located. Bird species of note recorded within the O02 tetrad include;

NBDC Records for Tetrad O02		
Species	**Dataset**	**Designation**
Barn Owl (*Tyto alba*)	Birds of Ireland	Red List
Barn Swallow (*Hirundo rustica*)	Birds of Ireland	Amber List
Black-headed Gull (*Larus ridibundus*)	Birds of Ireland	Red List
Common Coot (*Fulica atra*)	Birds of Ireland	Amber List
Common Goldeneye (*Bucephala clangula*)	Birds of Ireland	Amber List
Common Kingfisher (*Alcedo atthis*)	Birds of Ireland	Annex I Bird Species
Common Kestrel (*Falco tinnunculus*)	Birds of Ireland	Amber List
Common Linnet (*Carduelis cannabina*)	Birds of Ireland	Amber List
Pochard (*Aythya ferina*)	Irish Wetland Birds Survey (I-WeBS) 1994-2001.	Amber List
Common Redshank (*Tringa totanus*)	Irish Wetland Birds Survey (I-WeBS) 1994-2001.	Red List
Common Sandpiper (Actitis hypoleucos)	Bird Atlas 2007 - 2011	Amber List
Common Snipe (*Gallinago gallinago*)	Birds of Ireland	Amber List
Common Starling (*Sturnus vulgaris*)	Birds of Ireland	Amber List
Common Swift (*Apus apus*)	Birds of Ireland	Amber List
Eurasian Curlew (*Numenius arquata*)	Birds of Ireland	Red List
Eurasian Teal (*Anas crecca*)	Bird Atlas 2007 - 2011	Amber List
Eurasian Tree Sparrow (*Passer montanus*)	Birds of Ireland	Amber List
Eurasian Wigeon (*Anas penelope*)	Irish Wetland Birds Survey (I-WeBS) 1994-2001.	Amber List

Eurasian Woodcock (*Scolopax rusticola*)	Birds of Ireland	Amber List
European Golden Plover (*Pluvialis apricaria*)	Birds of Ireland	Red List
Great Black-backed Gull (*Larus marinus*)	Birds of Ireland	Amber List
Great Cormorant (*Phalacrocorax carbo*)	Irish Wetland Birds Survey (I-WeBS) 1994-2001.	Amber List
Great Crested Grebe (*Podiceps cristatus*)	Bird Atlas 2007 - 2011	Amber List
Greylag Goose (*Anser anser*)	Bird Atlas 2007 - 2011	Amber List
Hen Harrier (*Circus cyaneus*)	Birds of Ireland	Amber List
Herring Gull (*Larus argentatus*)	Irish Wetland Birds Survey (I-WeBS) 1994-2001.	Amber List
House Martin (*Delichon urbicum*)	Birds of Ireland	Amber List
House Sparrow (*Passer domesticus*)	Birds of Ireland	Amber List
Lesser Black-backed Gull (*Larus fuscus*)	Irish Wetland Birds Survey (I-WeBS) 1994-2001.	Amber List
Little Egret (*Egretta garzetta*)	Bird Atlas 2007 - 2011	Annex I Bird Species
Little Grebe (*Tachybaptus ruficollis*)	Bird Atlas 2007 - 2011	Amber List
Mallard (*Anas platyrhynchos*)	Birds of Ireland	Amber List
Merlin (*Falco columbarius*)	Birds of Ireland	Amber List
Mew Gull (*Larus canus*)	Bird Atlas 2007 - 2011	Amber List
Mute Swan (*Cygnus olor*)	Birds of Ireland	Amber List
Northern Goshawk (*Accipiter gentilis*)	Rare birds of Ireland	Amber List
Northern Lapwing (*Vanellus vanellus*)	Birds of Ireland	Red List
Northern Wheatear (*Oenanthe oenanthe*)	Birds of Ireland	Amber List
Peregrine Falcon (*Falco peregrinus*)	Bird Atlas 2007 - 2011	Annex I Bird Species
Red Grouse (*Lagopus lagopus*)	Birds of Ireland	Red List
Ringed Plover (*Charadrius hiaticula*)	The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991	Amber List
Rock Pigeon (*Columba livia*)	Ireland's BioBlitz	Annex II Bird Species
Sand Martin (*Riparia riparia*)	Bird Atlas 2007 - 2011	Amber List
Sky Lark (*Alauda arvensis*)	Birds of Ireland	Amber List
Spotted Flycatcher (*Muscicapa striata*)	Birds of Ireland	Amber List
Stock Pigeon (*Columba oenas*)	Bird Atlas 2007 - 2011	Amber List
Tufted Duck (*Aythya fuligula*)	Irish Wetland Birds Survey (I-WeBS) 1994-2001.	Amber List
Whinchat (*Saxicola rubetra*)	Birds of Ireland	Amber List
Yellowhammer (*Emberiza citrinella*)	Birds of Ireland	Red List

The River Camac could offer suitable foraging habitat for Kingfisher (*Alcedo atthis*) however there is no suitable nesting habitat for Kingfisher within the site boundary. No trees or hedgerow will be removed along the banks of the River Camac therefore there will be no significant disturbance to Kingfisher if active along this section of the River Camac.

5.2 BADGER

There are numerous NBDC records for Badger within the Tetrad O02. Animal paths were observed within the proposed site. However, these were attributed to Fox and Rabbit activity. There was no evidence of a badger sett at the site. The treeline and hedgerow habitats would offer suitable foraging habitat for badgers however the site is surrounded by busy roadways to the east and south. The N7 in particular would be a significant hindrance to movement of badgers in the area.

5.3 BATS

A bat survey was not undertaken as part of this assessment as it would not be carried out within the optimum period in the season to survey bat activity and nor was there suitable weather conditions in late November.

The mature trees within the site are mainly Ash (*Fraxinus excelsior*) with some Elm (*Ulmus* sp.) that has is succumbing to Dutch elm disease (*Ophiostoma novo-ulmi*). Mature Willow (*Salix* spp.) is found along the Camac River. Most of the Ash (*Fraxinus excelsior*) within the hedgerows/treelines had significant ivy growth on their trunks. The mixed woodland along the road boundaries is not of sufficient age to offer any potential for bat roosting but would be suitable foraging habitat for bats. The agricultural sheds would not offer suitable roosting habitat for bats as they are open and exposed.

The N7 (Naas Road) and Grange Castle Road along the south and east boundary both have street lighting. In addition, Casement Aerodrome, Baldonnell Business Park and the National Vehicle Distribution Centre are located west of the proposed site (approximately 750m). This lighting would have an impact on foraging bats within the vicinity of the proposed development.

NBDC has records for Soprano Pipistrelle (*Pipistrellus pygmaeus*), Pipistrelle (*Pipistrellus pipistrellus sensu lato*) and Lesser Noctule (*Nyctalus leisleri*) within the 2km Tetrad O02P in which the proposed site is located.

A follow up survey during the active season (March-October) for bats should ideally be done of the trees that will be felled as part of the proposed development. The survey should be carried out from dusk through the night till dawn to ensure that bats do not re-enter the tree. Tree-felling should ideally be undertaken in the period late August to late October/early November if there is a potential for bats to use the trees. A complete tree inspection by a bat ecologist would be required if a bat roost is suspected (NRA, 2006).

Figure 5.3.1 Examples of trees with a low-moderate potential bat roosting due to heavy ivy growth

Figure 5.3.2 Dead Elm along hedgerow and Ash along the River Camac with a potential for bat foraging corridors. These trees will not be removed as part of the proposed development.

Figure 5.3.3 Mixed immature woodland and hedgerow with negligible potential for bat roosts but have potential for bat foraging corridors.

5.4 OTTER

While no sightings of otter, or evidence of otter (including holts, slides, spraints and tracks) were recorded during the site walkover, given that the Camac River flows along the boundary of the proposed development site it is probable otter is in the surrounding area of the proposed site. NBDC has records of otter within the wider area of the proposed development. Otter would also be found within the River Liffey. The proposed development site is mainly comprised of agricultural/amenity grasslands which can be considered as modified and of lower value to foraging otters.

5.5 INVERTEBRATES

The site survey was done in late November which is not an optimal time to observe invertebrates. Bumblebees (*Bombus*) and Wasps (*Vespidae*) were noted during the site assessment with Midge (*Nematocera*) found near the Camac River. The hedgerows, treelines, watercourses and grasslands would provide suitable habitat for invertebrates.

The Camac River and Baldonnell Upper watercourse would offer suitable habitat for invertebrates but not for protected invertebrates such as Whorl Snail (*Vertigo* sp.). The site does not contain any habitat suitable for Marsh Fritillary (*Euphydryas aurinia*). The Camac River is noted as containing White-clawed Crayfish (*Austropotamobius pallipes*), this species was observed within this river during the site assessment.

Invertebrates' records for the previous thirty years were reviewed on the NBDC website for the 10km square in which the proposed development is located. Invertebrates' species of note recorded within the O02 tetrad include;

SPECIES	SPECIES NAME	DATASET	DESIGNATION
Butterfly	Small Heath (*Coenonympha pamphilus*)	Irish Butterfly Monitoring Scheme	Near threatened
Bee	Andrena (Andrena) fucata	Bees of Ireland	Near threatened
Bee	Andrena (Oreomelissa) coitana	Bees of Ireland	Vulnerable
Bee	Bombus (Bombus) cryptarum	Bees of Ireland	Data deficient
Bee	Bombus (Bombus) magnus	Bees of Ireland	Data deficient
Bee	Gipsy Cuckoo Bee (*Bombus (Psithyrus) bohemicus*)	Bees of Ireland	Near threatened
Bee	Gooden's Nomad Bee (*Nomada goodeniana*)	Bees of Ireland	Endangered
Bee	Large Red-Tailed Bumble Bee (*Bombus (Melanobombus) lapidarius*)	Bees of Ireland	Near threatened
Bee	Lasioglossum (Dialictus) smeathmanellum	Bees of Ireland	Data deficient
Bee	Megachile (Delomegachile) willughbiella	Bees of Ireland	Near threatened
Bee	Megachile (Megachile) centuncularis	Bees of Ireland	Near threatened
Bee	Moss Carder-bee (*Bombus (Thoracombus) muscorum*)	Bees of Ireland	Near threatened
Bee	Nomada striata	Bees of Ireland	Endangered
Beetle (*Coleoptera*)	Macroplea appendiculata	Water Beetles of Ireland	Near threatened

5.6 AMPHIBIANS AND REPTILES

The Camac River and Baldonnell Upper watercourse located along the development site boundary would be considered suitable habitat for amphibians such as the Common Frog (*Rana temporaria*). No Lizards were noted during the site assessment with no areas of exposed concrete/rock that would offer suitable sunbathing areas. The mature hedgerows could act as suitable terrestrial habitat and migration corridors for both amphibians and reptiles. NBDC records for the 10km tetrad O02P include the protected species Common Frog (*Rana temporaria*), Smooth Newt (*Lissotriton vulgaris*) and Common Lizard (*Zootoca vivipara*) but no amphibian or reptile are recorded within the 2km tetrad O02.

5.7 OTHER SPECIES

The overall site consists of mainly grasslands with hedgerows and treelines along the field boundaries. Given the urban setting and busy roadways (N7/L1021) it is very unlikely that large mammals such as Deer would be found within the site. It is possible that Irish hare (*Lepus*

timidus hibernicus) could utilise the site as Rabbit (*Oryctalagus cuniculus*) activity was noted at the site (both burrows and faeces). Fox (*Vulpes vulpes*) was also noted as active within the site with a den found along the hedgerow to the north and faeces found along the Camac River. Other fauna not observed but would be typically found throughout the rest of Ireland would be present in the area of the proposed development. These include Hedgehog (*Erinus europaeus*), Stoat (*Mustela erminea hibernica*) and Wood Mouse (*Apodemus sylvaticus*).

Fauna records for the previous thirty years were reviewed on the NBDC website for the tetrad O02 include the following; Badger (*Meles meles*), Pygmy Shrew (*Sorex minutus*), Red Squirrel (*Sciurus vulgaris*), Otter (*Lutra lutra*), Pine Marten (*Martes martes*), Red Deer (*Cervus elaphus*) and Hedgehog (*Erinaceus europaeus*).

Invasive Fauna of note include; American Mink (*Mustela vison*), Brown Rat (*Rattus norvegicus*), Eastern Grey Squirrel (*Sciurus carolinensis*), Rabbit (*Oryctolagus cuniculus*), Greater White-toothed Shrew (*Crocidura russula*), Sika Deer (*Cervus nippon*), Fallow Deer (*Dama dama*) and House Mouse (*Mus musculus*).

Table 5.6: Ecological Value of Species of the Proposed Development

SPECIES	SPECIES RATING	RATIONALE
Badger	Local importance, low to high value	Yes. The treeline and hedgerow would provide both shelter and foraging resource for badgers. Given the proximity of Corkagh Park it is likely badger would forage along the Camac River. Badger activity would be limited by the proximity of the N7 and wider urban area.
Bats (foraging and commuting habitat only – no bat roosts identified)	Local importance, higher value	Yes. The hedgerows / treelines within and adjacent to the proposed development are likely to be utilised by bats for both foraging and commuting.
Otter	Local importance, higher value	Yes. The Camac River within the site is limited in volume but otter could utilise for foraging for prey such as crayfish and frogs.
Other	Local importance, low to high value	Yes. Evidence of other mammals at the site include Rabbit and Fox. Site has some potential to support other mammal species such as Hedgehog.
Breeding Birds	Local importance, higher value	Yes. All birds, their nests, eggs and young are protected under the Wildlife Act.
Aquatic Fauna	Local importance, higher value	Yes. The Camac River has White-clawed crayfish within it. The river could support juvenile fish, but volume would limit large fish migrating upstream.

6. PROTECTED SITES

6.1 NATURA 2000 SITES WITHIN ZONE OF INFLUENCE

In assessing the zone of influence of this project upon European sites, the following factors must be considered:

- Potential impacts arising from the project;
- The location and nature of European sites;
- Pathways between the development and European sites.

There is no standard radius that can be used to select which European sites are to be analysed. This can only be determined by looking at the zone of influence of the project at hand. A rule of thumb often used is to include all European sites within a distance of 15km.

Three Special Protection Area (SPA) sites occur within 15km of the proposed development and five Special Area of Conservation (SAC) sites occur within 15km of the proposed development and are shown in the following table:

SITE NAME	DESIGNATION	SITE CODE	DISTANCE
Glenasmole Valley	SAC	001209	6.1km SE
Wicklow Mountains	SAC	002122	7.6km SE
Rye Water Valley/Carton	SAC	001398	8km NW
Wicklow Mountains	SPA	004040	10.6km SE
Red Bog	SAC	000397	13.9km SW
Poulaphouca Reservoir	SPA	004063	14km SW
South Dublin Bay and River Tolka Estuary	SPA	004024	14.5km NE
South Dublin Bay	SAC	000210	14.5km NE

See Appendix A for maps of the Natura 2000 sites within 2km and 15km of the proposed development site. The main source-pathway this site has with any of the sites listed above is hydrological due to the Camac River flowing along the field boundary. The only protected sites hydrologically connected to the proposed site are South Dublin Bay SAC (Site code: 000210) and South Dublin Bay and River Tolka Estuary (Site code: 004024). However, given the hydrological distance the dilution effect of Dublin Bay/Irish Sea and that no construction works will take place within a watercourse the potential impact on both SAC and SPA would not be significant.

The proposed site would not have any significant impact on the other sites listed above as the site does not contain any protected species or habitat of conservation value. In absence of a source pathway there would be no significant impact on the Natura 2000 Network.

6.2 OTHER PROTECTED SITES WITHIN ZONE OF INFLUENCE

No National Heritage Area occurs within 15km of the proposed development. Eleven proposed National Heritage Areas (pNHA) occur within approximately 15km of the proposed development.

SITE NAME	DESIGNATION	SITE CODE	APPROX. DISTANCE
Grand Canal	pNHA	002104	3km N
Lugmore Glen	pNHA	001212	3.7km SE
Slade Of Saggart And Crooksling Glen	pNHA	000211	4.6km SW
Dodder Valley	pNHA	000991	5.4km SE
Glenasmole Valley	pNHA	001209	6.1km SE
Liffey Valley	pNHA	000128	6.4km NW
Royal Canal	pNHA	002103	8km NW
Kilteel Wood	pNHA	001394	10.3km SW
Fitzsimon's Wood	pNHA	001753	13km SE
Red Bog	pNHA	000397	13.7km SW
South Dublin Bay	pNHA	000210	14.5km NE

See Appendix A for maps of the pNHAs within 2km and 15km of the proposed development site.

The main source-pathway this site has with any of the sites listed above is hydrological due to the Camac River flowing along the field boundary. The only protected sites hydrologically connected to the proposed site are South Dublin Bay pNHA (Site code: 000210) and Dolphins, Dublin Docks pNHA (Site code: 000201) which are connected via the Rivers Camac and Liffey. Water quality could have an impact on these sites however the proposed surface drainage system and waste water system connection to be installed at the site will prevent a significant impact on the water quality of these sites. The proposed site would not have any significant impact on the other sites listed about as the site does not contain any protected species or habitat of conservation value nor is there a direct hydrological link between the sites.

7.0 ECOLOGICAL IMPACT ASSESSMENT

The construction phase of the development would result in a change of grassland from agricultural to amenity. The fields to the northwest and southeast are currently being left to go fallow with recolonising plants typically found in agricultural land becoming more frequent. The majority of the flora found here are recolonising species, as such the area would be considered as having been modified and of low ecological value.

Sections of hedgerows will be removed however additional hedgerows will be planted with native species. The majority of the mature trees within the site are Ash (*Fraxinus excelsior*) that may become susceptible to Ash Dieback (*Hymenoscyphus fraxineus*) that is currently spreading through Ireland. Elm (*Ulmus* sp.) within the hedgerow is already dead or dying due to Dutch Elm Disease (*Ophiostoma novo-ulmi*), this pathogen is established in Ireland and prevents most native Elms from reaching maturity. Any new native trees planted within the site should come from disease resistant breeds. No hedgerow will be removed along the Camac River. The loss of hedgerow habitat within the site will be offset by planting new hedgerows with native species. The sections of hedgerow/treeline that require removal would not be undertaken during the 1st of March to the 31st of August, so as not to disturb nesting bird species. This habitat would offer suitable breeding areas for birds and its removal should be undertaken outside the bird nesting season.

Dust emissions may arise during construction activities, in particular during earth-moving works, which may have the potential to impact upon photosynthesis, respiration and transpiration processes of flora due to the blocking of leaf stomata and have the potential to cause nuisance to fauna. Given the transient nature of construction works the potential impact to flora and fauna would not be considered significant when appropriate measures are taken to protect the environment during the construction phase.

7.1 TERRESTRIAL BIODIVERSITY PROTECTION PROTOCOL

As a matter of standard construction practice, the development would be constructed in accordance with the following methods and guidelines:

- All construction works would be confined as far as possible to the development footprint;
- Where possible, no construction works would be conducted outside of normal working hours, to reduce potential noise disturbance to nocturnal species;
- Should a protected fauna species such as bat species, badger or hedgehog be found during the construction phase of the project, an officer of the NPWS would be notified prior to the resumption of construction works;
- Where possible, vegetation removal works would be scheduled outside of the 1st of March to the 31st of August period, so as not to disturb nesting bird species;
- If works should take place beside any trees that will remain as part of the landscape plan, then a root protection would be maintained throughout the construction phase;
- The construction works contractor would take cognisance of the NRA's document "*Guidelines for the Protection and Preservation of Trees, Hedgerows and Scrub Prior to, During and Post Construction of National Road Schemes*", 2006. In particular, the

construction works contractor would take cognisance of the guidelines with regards soakaway, waste water drainage and the determination of the root protection area of the existing trees to be retained along the boundary of the proposed site;

- A Landscape Plan will be prepared as part of the development and will take into consideration the wider environment and the use of native species where possible;
- All hedgerows will be replanted with native hedgerow species;
- All planting of trees and hedges to be undertaken during bare root season November to April. The balance of tree planting and lawn seeding to be completed within 12 months of the completion of construction work of the development.

7.2 DISTURBANCE TO PROTECTED HABITATS AND SPECIES

The proposed development does not directly impinge on any part of a protected site, and as such would not be expected to have any in-situ effects upon a protected site through loss or destruction of habitat, fragmentation of habitat, disturbance of habitat or direct reduction in species density.

7.2.1 Badger

No badger setts were recorded during the ecological survey or within the zone of influence of significant disturbance of the proposed development.

If a badger sett is discovered during site clearance works then this would have a negative impact on badger therefore mitigation measures should be put in place under licence having regard for Guidelines for the Treatment of Badgers Prior to the Construction of National Road Schemes (NRA 2006). The building site should be made safe for mammals with hazards such as open holes/excavations covered over or fitted with ramps to allow for escape. Guidelines on both active and inactive sets must be followed:

"The destruction of a successfully evacuated badger sett may only be conducted under the supervision of qualified and experienced personnel under licence from the NPWS. The possibility of badgers remaining within a sett must always be considered; suitable equipment should be available on hand to deal with badgers within the sett or any badgers injured during sett destruction"

7.2.2 Bats

It is an offence under Section 23 of the Wildlife Act and under Section 51 of Habitat Regulations, 2011 to kill a bat or to damage or destroy the breeding or resting place of any bat species. Under the Habitat Regulations, 2011 actions that intentionally or unintentionally harm, damage or destroy a bat or its roosting site are considered to be an offence. According to Section 54(2) of the Habitats Regulations 2011, a derogation licence to disturb bats or the breeding or resting places may be granted 'where there is no satisfactory alternative, and the derogation is not detrimental to the maintenance of the populations of the species to which the Habitats Directive relates at a favourable conservation status in their natural range'.

Furthermore, as a signatory to the EUROBATS Agreement (Agreement on the Conservation of Populations of European Bats, 1994), Ireland is required to protect their habitats and

important feeding areas from damage or disturbance. All Irish bat species are listed in Appendix II of the Bern Convention (1979), as species requiring protection.

A follow up bat survey of the mature trees within the site boundary shall be undertaken during the active bat survey season (April – September). This survey will be carried out at dawn/dusk and will monitor bat activity and any trees that have the potential for bats to roost in. The criteria used to categorise the PRFs or suitability of trees as a potential roost is based upon the guidelines by Collins (2016) and Hundt (2012). Examples of such features include, natural holes, cracks/splits in major limbs, loose bark and hollows/cavities.

Artificial lighting during the construction and operational phases has the potential to negatively impact upon bat species, as illumination can impact upon their roosting sites, commuting routes and foraging areas. During the construction phase, works are not anticipated to be conducted outside of normal working hours, which would considerably reduce the potential impacts upon bat species. Should lighting be required during construction, measures are included below to reduce the potential impact of light pollution. Operational phase impacts on bats would be associated with permanent lighting associated with the new proposed development, including the carpark, clubhouse and amenity areas. Flood lighting of sport pitches would mainly be used during the winter months during the normal operational hours of the club. It is not anticipated that this lighting would be in use late at night as all training will typically run from 7:30pm – 9:30pm (Tuesday – Thursday). Competitive matches are typically played during the day at weekends and only occasionally midweek. In the absence of mitigation measures, operational lighting has the potential to result in a moderate to adverse impact upon bat species. Therefore, measures with regards artificial lighting, as outlined below would be recommended to be implemented.

Artificial Lighting during construction phase;

- Construction works in the hours of darkness, when bats are active (April – October), would be kept to a minimum;
- Lighting of hedgerows / treelines would be avoided where possible;
- Direct lighting of the River Camac to be avoided;
- Should lighting be required during construction works, it would be of a low height (without compromising safe working conditions) to ensure minimal light spill. Where possible and where practicable to do so, timers or motion sensors would be used;
- Directional lighting would be used where possible, by use of louvres or shields fitted to the lighting;

White light emitting diode (LED) would be used where possible, which is considered to be low impact in comparison to other lighting types.

Artificial Lighting during operational phase;

The lighting design for the proposed development would be finalised at the detailed design stage. The lighting design would take cognisance of the following mitigation measures:

- Lighting would be directed to where it is required only;
- Lighting of hedgerows / treelines would be avoided where possible;

- Buildings, carparks and site entrance lighting would be angled away from hedgerows and treelines;
- Direct lighting of the River Camac to be avoided;
- Lighting would be of low height where possible, to minimise light spill;
- Where possible and practicable to do so, timers or motion sensors would be used;
- White LED or amber coloured LED outdoor lighting would be used where possible, which is considered to be low impact in comparison to other lighting types.

7.2.3 Otter & Other Fauna

It is not anticipated that there would be any significant impacts upon otter & other fauna during the operational/construction phase of the development arising from the proposed drainage networks. Stormwater from the proposed development would comprise of clean rainwater run-off from roof and paved areas and would be directed to the drainage network and attenuation system within the proposed development. The WWTS will be installed and maintained as per the relevant guidelines (DoHLGH, 2016). Therefore, there would no impact on water quality that could cause a potential impact on aquatic fauna such as fish and crayfish that otter or Kingfisher would prey upon. Sports activities within proximity to the River Camac will cease at 9.30pm. Otter are nocturnal animals and therefore any activity at the proposed site would not significantly impact on foraging otter that utilise this section of the River Camac. The change of use from agricultural to amenity grassland will not impact on foraging otter.

7.3 INVASIVE SPECIES

The following controls for the prevention / treatment of invasive flora species would be implemented throughout the construction phase of the development:

- Regular site inspections would be undertaken to ensure that no growth of invasive species has taken place;
- The construction works contractor would ensure that all equipment and plant is inspected for the presence of invasive species and thoroughly washed prior to arriving to, and leaving from, the development site;
- All relevant construction personnel would be trained in invasive flora species (main species of concern) identification and control measures;
- In the unlikely event of an invasive species listed under the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 appearing onsite, works within the immediate vicinity would cease until the invasive plant has been appropriately treated and disposed of to a suitably licenced facility, in accordance with Regulation 49 of the 2011 Regulations;
- During the operational phase the grounds keeper would monitor the site for any potential invasive species and put in a management plan to control the spread of any invasive flora that are introduced to the site;
- Cognisance would be taken of the National Roads Authority's Guidelines on "*The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads*".

- Care should be taken if using herbicides beside a watercourse as this can have an impact on aquatic flora and fauna and can travel downstream of the site. Herbicide application should only be carried out by suitably qualified contractors or operators with strict reference to the product label, local land use, health and safety considerations and any pertinent regulations;
- All herbicide treatment must comply with the pesticide regulations S.I. No. 155/2012 - European Communities (Sustainable Use of Pesticides) Regulations 2012 or any amended or current regulations at the time of use.

7.4 AQUATIC ECOLOGY

The following mitigation measures would be proposed to ensure there is no significant impact upon the aquatic ecology of the area owing to a deterioration in water quality:

- The construction works contractor would adhere to standard construction best practice, taking cognisance of the Construction Industry Research and Information Association (CIRIA) guidelines "Control of Water Pollution from Construction Sites; guidance for consultants and contractors" 2001 and "Control of Water Pollution from Construction Sites – Guide to Good Practice", 2002;
- Any vegetation cuttings along the Camac River and Baldonnell Upper watercourse should be removed from the watercourse and stored away from the banks;
- The riparian zone along the River Camac should be maintained to increase biodiversity with a suitable buffer zone in place;
- No fertilizer should be used within or in close proximity to the River Camac riparian zone;
- Grass clippings should not be stored in proximity to the any watercourse or manhole to prevent organic matter entering a watercourse;
- Construction activities such as earth moving shall be avoided during or after prolonged rainfall or an intense rainfall event and work will cease entirely if it is evident that water quality is being impacted within the unnamed watercourse;
- Daily visual inspections would be undertaken of the Camac River and Baldonnell Upper watercourse within the site during construction works;
- Should water be encountered during excavation works at the site, water would be pumped to a silt control feature, such as an appropriately sized tank / tanker and used for settlement;
- This settlement tank must have adequate capacity and water must be filtered before discharging. Water must not be directly discharged to a watercourse;
- Excavations and earth-moving activities would be planned outside periods of heavy rainfall, to limit the potential for suspended solids to become entrained within surface water run-off;
- Silt fencing would be placed around spoil areas until such time as the excavated soil has been used in landscaping / re-instatement works;
- Where possible, surface water run-off would be diverted from areas of bare / exposed ground;

- The use of pre-cast concrete where possible, the delivery and pouring of concrete would be supervised;
- All plant machinery and equipment would be maintained in good working order and regularly inspected;
- The re-fuelling of machinery would not take place within the immediate vicinity of drainage network;
- Spill kits, adequately stocked with spill clean-up materials such as booms and absorbent pads, would be available onsite;
- In the unlikely event of a hydrocarbon spillage, contaminated spill clean-up material would be properly disposed of to an authorised waste contractor;
- Cognisance should be taken of Inland Fisheries Ireland's "*Guidelines on Protection of Fisheries During Construction Works in and adjacent to Waters*";

Assuming all mitigation measures are put in place, there would be no significant residual impacts to the aquatic environment from the proposed development.

8.0 CUMULATIVE IMPACTS

The residual impact of this proposed development is anticipated to be slight negative local effect. Cumulative effects from a development in general can result from individually insignificant but collectively significant actions taking place over a period of time or concentrated in a location (CIEEM, 2018).

Considering the nature of the development and the adjacent urban and industrial areas further to the northwest, the main potential cumulative impact upon biodiversity would be a deterioration in water and air quality during the operational phase resulting in an impact upon aquatic flora and fauna species and / or loss or fragmentation of natural habitat.

It is not anticipated that there would be any significant impact upon water quality during the operational phase, given that stormwater from the site would be directed to the drainage network and attenuation system and percolate to ground within the site. The surface water drainage will be attenuated in line with the recommended guidelines and policy. The foul water drainage system will be discharged to the on-site wastewater treatment (Tertiary treatment plant) and infiltration zone. To ensure the WWTS correctly works the club management will ensure that no chemicals, oils, grease and other fluids or materials that are not easily broken down are discharged into the system. Install low water consumption toilets, high efficiency showerheads and appliances. Ensure no trees are planted in close proximity to the WWTS. Have the WWTS inspected regularly by a licensed company. Once the WWTS is in compliance with all regulations and maintained by certified contractors there will be no significant impact on water quality in the area. The WWTS will be installed as per the Technical Guidance Document H – Drainage and Waste Water Disposal (DoHLGH, 2016).

With regards potential habitat loss or fragmentation of habitat, the proposed development is not anticipated to result in a significant impact upon habitat loss / fragmentation during either the construction or operational phases, given that the majority of the land would comprise of modified habitats of low ecological value and given that the landscape plan for the development will take into consideration the setting and use of native species. Any hedgerows removed will

offset by planting new hedgerows with native species typically found in hedgerows in the local area. No construction works will take place within the Camac River or Baldonnell Upper watercourse. Therefore, there would be no cumulative habitat loss or fragmentation impacts which could pose a significant risk to biodiversity.

Potential cumulative lighting impacts from external lighting for both developments have been addressed in the mitigation measures proposed in Section 7.2.2 for this development therefore cumulative impacts as a result of external lighting should not arise.

IMPACT	DEVELOPMENT PHASE	SIGNIFICANCE	MITIGATION MEASURES	RESIDUAL SIGNIFICANCE	RESIDUAL IMPACT TYPE
Habitat Loss	Construction & Operational	Slight significance	• Excavated soils would be segregated into subsoil and topsoil and reused in reinstatement and landscaping works; • The landscaping plan for the development take into consideration the setting and use of native species.	Not significant	Neutral
Introduction of Invasive Flora Species	Construction & Operational	Slight significance	• Construction plant would be inspected and washed prior to arriving onsite; • Regular site inspections for the presence of invasive species would be undertaken; • Should invasive species appear onsite, works would immediately cease until the plant was appropriately treated and disposed of. • Grounds keeper will ensure site remains free of high impact invasive species.	Not significant	Neutral
Fauna Disturbance	Construction	Moderate significance	• Where possible, no construction works would be conducted outside of normal working hours • All plant machinery and equipment would be maintained in good working order and regularly inspected • Where possible, vehicles would be equipped with mufflers to suppress noise • As a minimum, the construction work contractor would comply with all legislative provisions relating to scrub / tree removal • Should a protected fauna species be found during the construction phase, the NPWS would be notified prior to the resumption of construction works	Slight significance	Minor Negative

IMPACT	DEVELOPMENT PHASE	SIGNIFICANCE	MITIGATION MEASURES	RESIDUAL SIGNIFICANCE	RESIDUAL IMPACT TYPE
			• Works should not take place beside a Badger Sett and guidelines by NRA followed.		
	Operational	Not significant	None required	Not significant	Neutral
Fauna Mortality	Construction	Moderate significance	• As a minimum, the construction work contractor would comply with all legislative provisions relating to hedgerow / tree removal • Where scrub and hedgerow / tree removal works that are required during the bird nesting season (1st March to 31st August), the sections of scrub and trees for removal would be inspected by an ecologist for the presence of breeding birds. Where nests are present, a decision would be made as to whether a licence is required from the NPWS, or whether a suitable buffer zone could be established around the active nest with removal works rescheduled until chicks have fledged. • If any Badgers, Hedgehogs or other protected fauna are found on site, the NPWS will be contacted. • In addition, review the Irish Wildlife Trust for links on appropriate fauna relocation services.	Slight significance	Minor Negative
Bats – Disturbance / Severance of Habitat	Construction	Slight significance	• Landscape plan would take into consideration the hedgerows along the boundary and steps to enhance this boundary with suitable planting if required; • Measures would be implemented to reduce the potential for light pollution;	Not significant	Neutral

IMPACT	DEVELOPMENT PHASE	SIGNIFICANCE	MITIGATION MEASURES	RESIDUAL SIGNIFICANCE	RESIDUAL IMPACT TYPE
			• Construction works in the hours of darkness would be kept to a minimum where possible		
	Operational	Slight significance	• Lighting design measures would be implemented to reduce the potential for upward light pollution; • Direct lighting of the Camac River should be avoided.	Not significant	Neutral
Surface Water Quality Deterioration	Construction	Moderate significance	• Standard construction control measures for the protection of surface waters would be implemented; • Concrete works would be supervised; • Appropriate storage and handling of fuels and oils; • Provision of spill kits;	Not significant	Neutral
	Operational	Moderate significance	• No herbicides to sprayed within proximity to the Camac River and Baldonnell Upper watercourse; • Grass clippings should not be stored in proximity to a watercourse	Not significant	Neutral
Designated Sites	Construction	Moderate significance	• Standard construction control measures for the protection of surface waters would be implemented • Concrete works would be supervised • Appropriate storage and handling of fuels and oils • Provision of spill kits	Not significant	Neutral
	Operational	Not significant	None required	Not significant	Neutral

8.1 DIFFICULTIES ENCOUNTERED IN COMPILING

There were no difficulties encountered in compiling any specific information regarding biodiversity. A follow up bat survey is recommended during the active bat survey season to ascertain if the mature trees have the potential to be in use as bat roosts.

8.1.1 "Do Nothing" Scenario

The footprint of the proposed development is mainly comprised of habitats which are modified and of low ecological value. The majority of the site is amenity and agricultural grasslands with common grass species and recolonising flora. It is likely if this development did not proceed the site would return to agricultural use. As the site is located along a busy national road and surrounded by urban development it is likely that this site will be developed for commercial use in the future. The hedgerows and treelines would need to be maintained with the dead Elm and any Ash that succumbs to Ash dieback likely to be removed. The River Camac would remain unaltered with the main potential impact on water quality to be from urban and industrial developments in the wider area.

9.0 CONCLUSIONS

It is the conclusion of this report that there would be no potential for any significant impact on protected species as a result of the proposed development. Measures put in place for the protection of flora and fauna will ensure there are no potential for significant effects, and the project is recommended to proceed as proposed.

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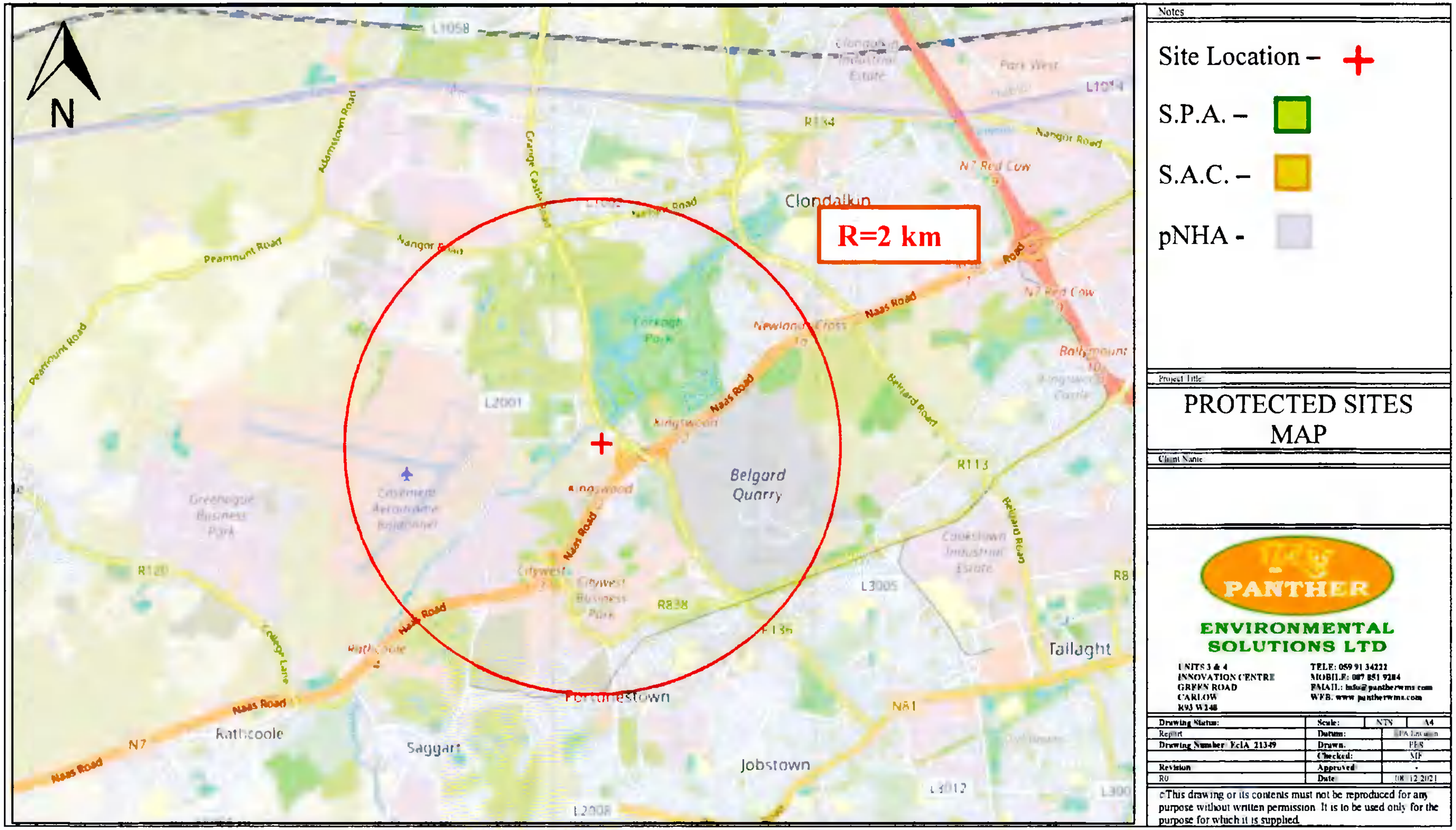
APPENDIX A

- PROTECTED SITES -

AND

- PROPOSED SITE LAYOUT-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Newlands Cross
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Citywest
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Rathcoole
Saggart
Jobstown
Tallaght
Fortunestown
Greenogue Business Park
Casement Aerodrome Baldonnel
Peamount Road
Nangor Road
Belgard Road
N7 Red Cow
N7
N81
R113
R120
R134
R838
L1058
L2001
L3005
Notes
Site Location –
S.P.A. –
S.A.C. –
pNHA -
Project Title
PROTECTED SITES MAP
Client Name
PANTHER
ENVIRONMENTAL SOLUTIONS LTD
UNITS 3 & 4
INNOVATION CENTRE
GREEN ROAD
CARLOW
R93 W248
TELE: 059 91 34222
MOBILE: 087 851 9284
Drawing Status:
Report
Drawing Number: EcIA 21349
Revision
R0
Scale:
NTS
A4
Datum:
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Date:
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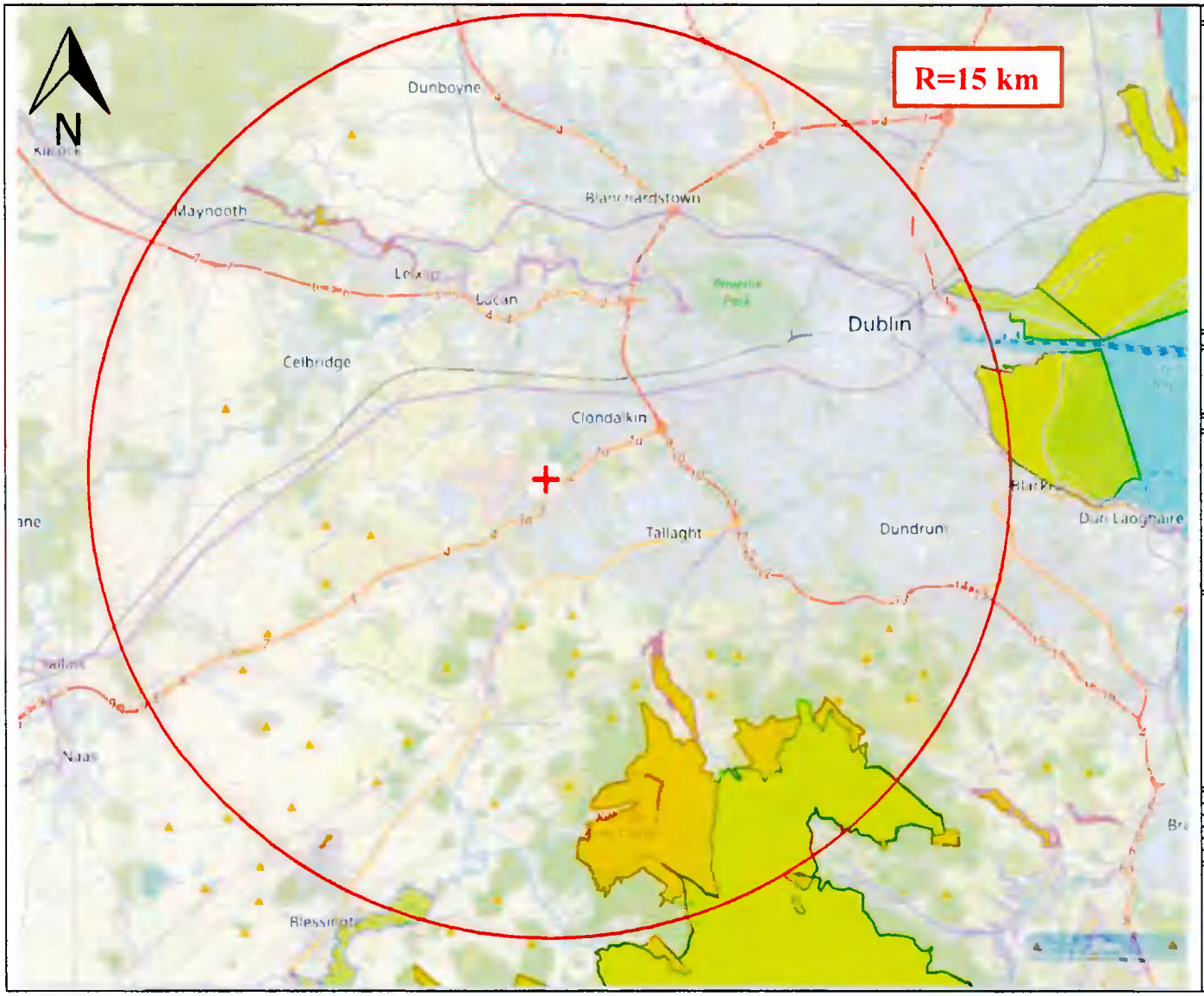

Notes

Site Location –

SPA –

SAC –

NHA –

pNHA –

Project Title

PROTECTED SITES MAP

Client Name

PANTHER
ENVIRONMENTAL SOLUTIONS LTD
UNITS 3 & 4
INNOVATION CENTRE
GREEN ROAD
CARLOW
R93 W248
TEL: 059 91 34222
MOBILE: 087 851 9284
EMAIL: info@pantherenvs.com
WEB: www.pantherenvs.com

Drawing Status	Scale:	NTS	A4
Report	Datum:		EPA Euref
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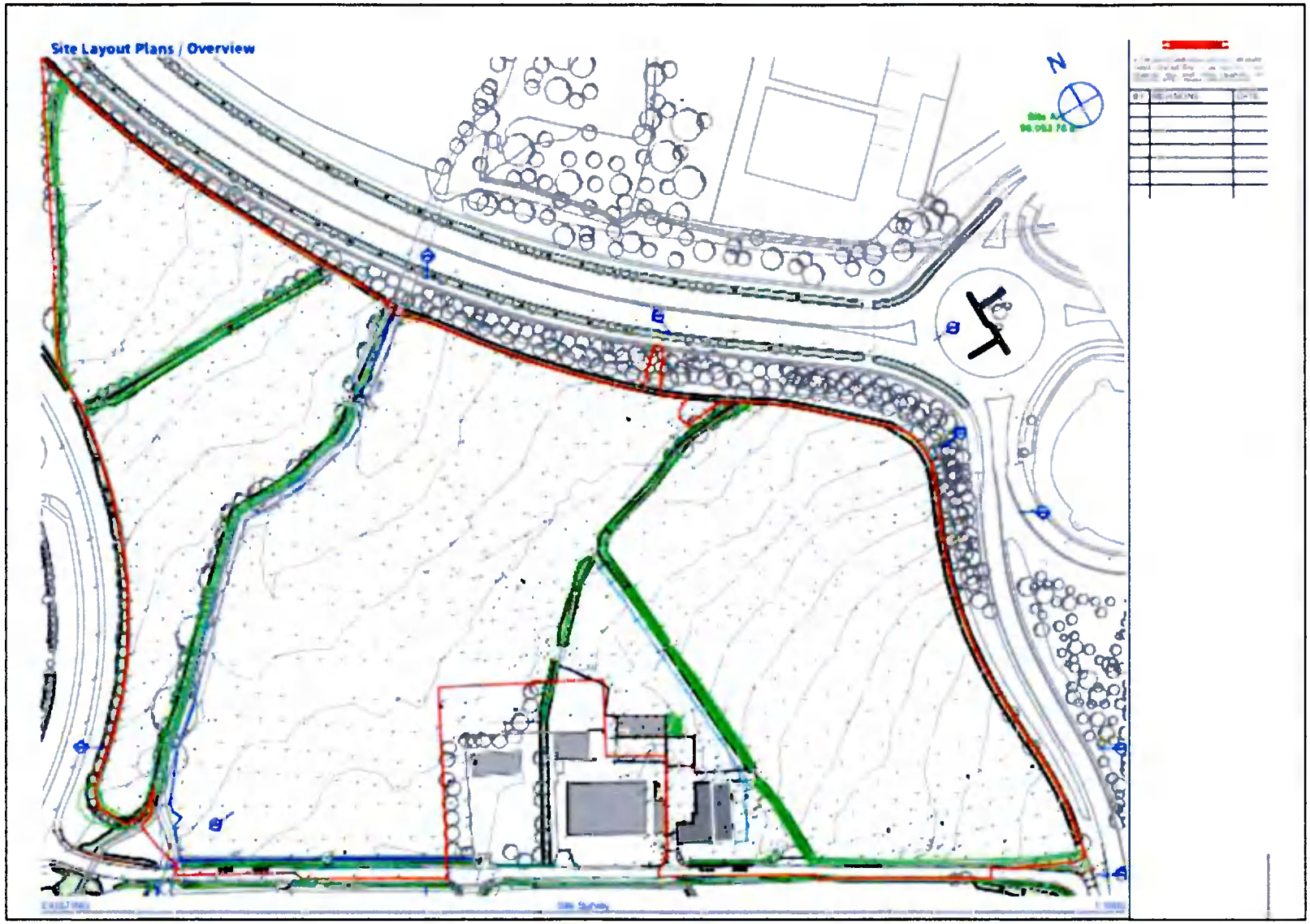
Site Layout Plans / Overview
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