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6.1 Introduction

This chapter has been prepared by Scott Cawley Ltd.

Scott Cawley Ltd. was commissioned by Brock McClure Planning and Development Consultants, on behalf of KW PRS ICAV acting for an on behalf of its sub-fund KW PRS Fund 10 (Kennedy Wilson), to undertake an Ecological Impact Assessment (EcIA) of a proposed development site, located at lands adjacent to 'The Grange', Brewery Road/ Stillorgan Road, Stillorgan, Blackrock, Co. Dublin (Grid reference O 20469 27200). The aims of this Ecological Impact Assessment are to:

- Establish baseline ecological data for the proposed development site;
- Determine the ecological value of the identified ecological features;
- Assess the impact of the proposed development on ecological features of value (flora and fauna);
- Apply mitigation measures to avoid, reduce, remedy or compensate impacts; and,
- Identify any residual impacts after mitigation.

6.2 Study Methodology

Relevant Legislation, Policy & guidelines

The assessment of the likely impacts of the proposed development on ecological resources has considered legislation, policy documents, and guidelines outlined in Appendix 6A of this report, where relevant.

Desk study

A desk study was carried out to collect any available information on the local ecological environment. The following resources assisted in the production of this report, in addition to those listed in the Reference section of this report:

- Ordnance Survey Ireland mapping and aerial photography[1];
- National Parks and Wildlife Service (NPWS) website[2];
- Dun Laoghaire-Rathdown County Council County Development Plan 2016-2022 (Dun Laoghaire- Rathdown County Council, 2016);
- Data on species that are rare, protected or threatened located within the zone of influence of the proposed development, as held by the National Biodiversity Data Centre[3]; and;
- Birds of Conservation Concern in Ireland (Colhoun & Cummins, 2013).

Field Survey Methodology

Habitats & Flora Survey

The subject lands were surveyed on 6th February 2019, in dry, bright conditions. All habitats were classified using the Guide to Habitats in Ireland (Fossitt, 2000), recording dominant species, indicator species and/or species of conservation interest; with the Fossitt category codes given in parenthesis. Plant nomenclature follows the Checklist of the Flora of Britain & Ireland (BSBI, 2007).

[1] Available online at http://www.osi.ie/Home.aspx. Accessed on 20/12/2018
[2] Available online at http://www.npws.ie/mapsanddata/. Accessed on 02/01/2019
[3] Available online at www.biodiversityireland.ie. Accessed on 02/01/2019

Fauna Survey

Fauna were surveyed through the detection of field signs such as tracks, markings, feeding signs, and droppings, as well as by direct observation. The habitats on site were assessed for signs of usage by protected/red-listed fauna species, and potential to hold these species.

1. Birds

Bird activity within the subject lands was recorded during the daytime survey on 6th February 2019. Two dedicated breeding bird surveys were also carried out in summer 2019. Data relating to these surveys is given in Table 6.1. Birds were identified using a combination of direct sightings and identification of songs and calls.

Date	Survey Times	Temperature	Weather
27th June 2019	7:00- 08:15	14	Dry, sunny, mild, still
5th July 2019	07:00 - 08:05	12	Dry, sunny, still

Table 6.1 - Dedicated Breeding Bird Surveys carried out in June and July 2019

2. Mammals (Excluding Bats)

The presence of other fauna, including those protected under national and international legislation such as badgers, otters and red squirrel, was determined based on the detection of field signs, such as:

- Droppings;
- Badger setts/otter holts/squirrel dreys or other mammal dens;
- Tracks; and,
- Hair caught on wire fences.

A dedicated badger survey was conducted within the subject lands on 6th February 2019.

3. Bats

An internal and external inspection of all accessible buildings[4] on site was undertaken, to assess their potential to support roosting bats and to search for signs of bat activity such as:

- Dead specimens;
- Bat droppings;
- Urines splashes;
- Fur-oil staining;
- Squeaking noises;
- Feeding remains (moth wings);
- Bat fly (Nycteribiid) pupal cases; and/or;
- Odour.

[4] Internal building inspections could not be undertaken in cottages which face out onto the N11 for health and safety reasons as the buildings were not safe to enter.

In addition, a number of trees located across the proposed development site were examined from ground level for potential bat roosts. They were assessed based on the presence of features commonly used by bats. Examples of such features include:

- Natural holes;
- Woodpecker holes;
- Cracks/splits in major limbs;
- Loose bark; and,
- Hollows/cavities.

Trees were categorised according to the criteria described below in Table 6.2.

Tree Category	Description
Suitable	Trees with multiple, highly suitable features capable of supporting larger roosts; Trees with definite bat potential, with potential for use by at least single bats; Trees with no obvious potential, although the tree is of a size and age that elevated surveys may result in cracks or crevices being found; or the tree supports some features which may have limited potential to support bats.
Unsuitable	Trees with no potential to support bats.

Table 6.2 - Assessing the value of trees to bats (derived from Hundt, 2012)

Bat surveys were conducted at the site having regard to the following guidelines:

- *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (Collins, 2016)
- *Bat Mitigation Guidelines for Ireland* (Kelleher & Marnell, 2006)
- *Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes* (NRA, 2006)

The Grange Marketing Suite and Oak Tree Business Centre were systematically inspected for signs of roosting bats on 6th February 2019. The Lodge building was examined on 8th February 2019. These inspections involved both internal and external examinations of all accessible areas of these buildings to search for signs of roosting bats (as outlined above). Following on from these inspections each building's suitability to support roosting bats was determined. Each building was categorised as being one of the following- highly suitable, moderately suitable or of low suitability. As per guidance contained in Collins (2016) the suitability of each building was then used to determine the number of bat activity surveys required:

- Low roost suitability – one survey visit comprising either one dusk emergence or one dawn re-entry survey.
- Moderate roost suitability – two separate surveys comprising one dusk emergence and a separate dawn re-entry survey.
- High roost suitability – three separate surveys comprising at least one dusk emergence and a separate dawn re-entry survey. The third visit can be either dusk or dawn.

The aim of the bat surveys was to identify whether the subject building was used by roosting bats, rendering it protected under wildlife law, and to identify which species of bats were present on site.

Dusk emergence surveys commenced approximately 20 minutes before sunset and lasted for two hours after (see Table 6.3 for details of dusk surveys completed). Dusk surveys were completed using both direct observation and a handheld ultrasound bat detector (Elekon Batlogger M) which was used to record any echolocation calls. For the first 1.5hrs of the survey the building which was the subject of the survey was monitored for signs of emerging bats, which would indicate that the building is used

by roosting bats. For the remainder of the survey, surveyors walked the lands at a slow pace to record any bat activity present.

Dawn surveys commenced 2hrs before sunrise and lasted for approximately 15 minutes after (see Table 6.3 for details of dawn surveys completed). Dawn surveys were completed in a similar fashion to dusk surveys (i.e. using both direct observation and a handheld ultrasound bat detector). For the first 30 minutes of the survey surveyors walked the lands at a slow pace to record any bat activity present. For the remainder of the survey, the subject building was monitored for signs of re-entering bats, which would indicate that the building is used by roosting bats.

Data collected during bat surveys was analysed on sound analysis software "BatExplorer".

Date	Building Name	Survey Type	Survey Times	Temperature	Weather
27th June	Marketing Suite	Dusk Emergence	21:30 - 23:55	18°C-16 °C	Dry, warm, still
27th June	N11 Cottages	Dusk Emergence	21:30 - 23:55	18°C -16°C	Dry, warm, still
12th July	Oak Tree Business Centre	Dawn Re-entry	03:10 - 05:25	16°C- 15°C	Dry, warm, breezy
12th July	Grange Cottages	Dawn Re-entry	03:10 - 05:25	17°C- 15°C	Dry, warm, breezy
25th July	The Lodge	Dusk Emergence	21:15 - 23:31	19°C - 20°C	Dry, warm, windy
25th July	N11 Cottages	Dusk Emergence	21:15 - 23:31	18°C - 19°C	Dry, warm, windy

Table 6.3 - Bat Survey Times and Weather Conditions

Ecological Evaluation and Impact Assessment Methodology

Site Evaluation Criteria

The criteria used to assess the ecological value (Appendix 6B) and significance of habitats follows *Guidelines for assessment of Ecological Impacts of National Road Schemes* (NRA, 2009) and is consistent with *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine* (CIEEM, 2018).

Impact Assessment Criteria

In accordance with *NRA guidelines* (2009), impact assessment is only undertaken of '*Key Ecological Receptors*' (KERs). KERs are within the Zone of Influence[5] of the development and are 'both of sufficient value to be material in decision making and likely to be affected significantly'. To qualify as KERs, features must be of Local Importance (Higher Value) or higher as per the criteria in Appendix 6B. Features of lower ecological value are not assessed. The highest levels of impact significance for each Key Ecological Receptor 'value' rating are shown in Table 6.4.

[5] In accordance with NRA (2009) guidelines, the Zone of Influence is an important term to define the receiving environment for the activities associated with the project and the biophysical changes that are likely to occur. The Zone of Influence is the 'effect area' over which change is likely to occur. This differs for different species and habitats due to varying sensitivities to potential impacts.

Key Ecological Receptor 'value' rating	Highest possible significance level
International Importance	Significant Positive/ Negative impact at International level
National Importance	Significant Positive/ Negative impact at National level
County Importance	Significant Positive/ Negative impact at County level
Local Importance (higher value)	Significant Positive/ Negative impact at Local level

Table 6.4 - Maximum level of impact significance for Sensitive Ecological Receptors

Impacts are described as being either significant or not significant.

6.3 The Existing Receiving Environment (Baseline)

Site Overview

The proposed development site is located at lands adjacent to The Grange, Brewery Road/ Stillorgan Road, Stillorgan, Blackrock, Co. Dublin (Grid reference O 20469 27200). The subject lands are largely comprised of disturbed ground, buildings and artificial surfaces and a marketing suite for the overall "The Grange" residential complex to the south and east of the subject lands. Small areas of overgrown landscape planting are also present around the marketing suite. According to the Dun Laoghaire-Rathdown County Development Plan 2016-2022, the subject lands are zoned '*A*' - "*To protect and/or improve residential amenity*". The surrounding lands are also residential in nature and comprise residential estates and open areas of green space. The N11 lies to the east of the subject lands while the N31 Brewery Road lies to the west.

Protected Areas

Special Areas of Conservation (SAC) are designated under the EC Habitats Directive (92/43/EEC), as amended, which is transposed into Irish law through a variety of legislation including the Birds and Habitats Regulations and the Planning and Development Acts. The legislation enables the protection of certain habitats (listed on Annex I of the Directive) and/or species (listed on Annex II). Special Protection Areas (SPAs) are designated under the Birds Directive (2009/147/EC). This allows for the protection of protected bird species listed on Annex I of the Directive, regularly occurring populations of migratory species (such as ducks, geese or waders), and areas of international importance for migratory birds.

National Heritage Areas (NHAs) are designations under the Wildlife Acts in order to protect habitats, species or geology of national importance. The boundaries of many of the NHAs in Ireland overlap with Natura 2000 sites. Although many NHA designations are not yet fully in force under this legislation (referred to as 'proposed NHAs' or pNHAs), they are offered protection in the meantime under planning legislation which requires that planning authorities give recognition to their ecological value.[6]

The proposed development site is not designated as an SAC, SPA, NHA or pNHA. The closest designated sites are South Dublin Bay SAC (000210) and South Dublin Bay and River Tolka Estuary SPA (004024), which are located c. 2.6km to the north-east. A list of designated sites within 15km of the proposed development, along with their qualifying interests, is included in Table 6.5, overleaf. The locations of these designated sites in relation to the proposed development is illustrated in Figure 6.1.

South Dublin Bay SAC (000210) is located c. 2.6km to the north-east of the subject lands. It is designated as an SAC due to the presence of four Annex I habitats within the sites boundary; tidal mudflats and sandflats; annual vegetation of drift lines; Salicornia and other annuals colonising mud

[6] Source: NPWS Website. Available online at http://www.npws.ie/protectedsites/naturalheritageareasnha/. Accessed 22nd April 2016

and sand; and; embryonic shifting dunes[7]. South Dublin Bay and River Tolka Estuary SPA (004024) is also located c. 2.6km to the north-east of the proposed development site. This SPA site is designated for the following species: Light-bellied Brent Goose *Branta bernicla hrota*, Oystercatcher *Haematopus ostralegus*, Ringed Plover *Charadrius hiaticula*, Grey Plover *Pluvialis squatarola*, Knot *Calidris canutus*, Sanderling *Calidris alba*, Dunlin *Calidris alpina*, Bar-tailed Godwit *Limosa lapponica*, Redshank *Tringa totanus*, Black-headed Gull *Larus ridibundus*, Roseate Tern *Sterna doughallii*, Common Tern *Sterna hirundo* and Arctic Tern *Sterna paradisaea*. An internationally important population of Light-bellied Brent Goose regularly occurs here. The site is also known to support nationally important numbers of the following species: Oystercatcher, Ringed Plover, Grey Plover, Knot, Sanderling, Dunlin, Bar-tailed Godwit, Redshank and Black-headed Gull. The site is also recognised as an important staging/ passage site for a number of tern species in the autumn[8]. Both South Dublin Bay SAC and South Dublin Bay and River Tolka Estuary SPA are hydrologically connected to the proposed development site via the existing surface water network, including the Brewery Stream. Connections also exist via the foul water network as foul waters generated at the proposed development site will be treated at Ringsend WWTP before ultimately discharging into Dublin Bay.

There are five proposed Natural Heritage Areas (pNHAs) located within 5km of the proposed development site (see Figure 2 overleaf). The zone of influence of the proposed development in terms of its potential impact on pNHAs was regarded to be relatively limited (i.e. less than 5km from the perimeter).

Booterstown Marsh pNHA (001205) is located c.3.1km to the north of the subject lands and is designated as a pNHA because it is the only saltmarsh in south Dublin and is recognised as a valuable habitat for many birds. It also contains a diverse flora including the protected plant Borrer's Saltmarsh-grass (*Puccinellia fasciculata*)[9]. There is no connectivity between the subject lands and Booterstown Marsh pNHA.

South Dublin Bay pNHA (000210) is located c.2.6km to the north-east of the subject lands. It is designated as a pNHA as it represents a fine example of a costal system, with extensive sand and mudflats, and incipient dune formations. It is also an internationally important bird site[10]. The Brewery Stream, to which the proposed development site drains, flows in close proximity to the subject lands, according to the EPA's online map viewer, and flows in the northerly direction until its outflow into South Dublin Bay just north of the Main Street in Blackrock. Like South Dublin Bay SAC, this pNHA site is connected to the proposed development site via the existing surface and foul water networks.

Dalkey Coastal Zone and Killiney Hill pNHA (001206) is located c. 4.5km to the north-east of the subject lands and is designated as it represents a fine example of a coastal system with habitats ranging from the sub-littoral to coastal heath. The flora is well developed and includes some scarce species (Bloody Crane's-bill (*Geranium sanguineum*), Bee Orchid (*Ophrys apifera*) etc.) and the islands (Dalkey Island, Lamb Island, Maiden Rock, Muglins) are important bird sites (Common Terns *Sterna hirundo*, Arctic Terns *Sterna paradisaea,* Roseate Terns *Sterna dougallii*, various waders and gull species)[11]. This pNHA site is connected to the proposed development site via the existing surface and foul water networks.

Dingle Glen pNHA (001207) is located c. 4.5km south-east of the subject lands and is designated for the variety of habitats which are contained within the site. It is a dry valley formed by a glacial lake overflow channel and contained regenerating woodland[12]. There is no connectivity between the subject lands and Dingle Glen pNHA.

[7] Source: Site Synopsis for South Dublin Bay SAC (000210) Available at: https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY000210.pdf

[8] Source: NPWS Site Synopsis for South Dublin Bay and River Tolka Estuary SPA (004024) Available at: https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY004024.pdf

[9] Source: NPWS Site Synopsis for Booterstown Marsh pNHA [001205] (18/11/2009)

[10] Source: NPWS Site Synopsis for South Dublin Bay SAC [000210] (10/12/2015) Available at: https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY000210.pdf

[11] Source: NPWS Site Synopsis for Dalkey Coastal Zone and Killiney Hill pNHA [001206] (18/11/2009)

[12] Source: NPWS Site Synopsis for Dingle Glen pNHA [001207] (18/11/2009)

Fitzsimon's Wood pNHA (001753) is located c. 2.9km to the south-west of the subject lands. It is designated a s a pNHA due to the presence of birch woodland which is very rare in Co. Dublin[13]. There is no connectivity between the subject lands and Fitzsimon's Wood pNHA.

[13] Source: NPWS Site Synopsis for Fitzsimon's Wood pNHA [001753] (14/12/2009)

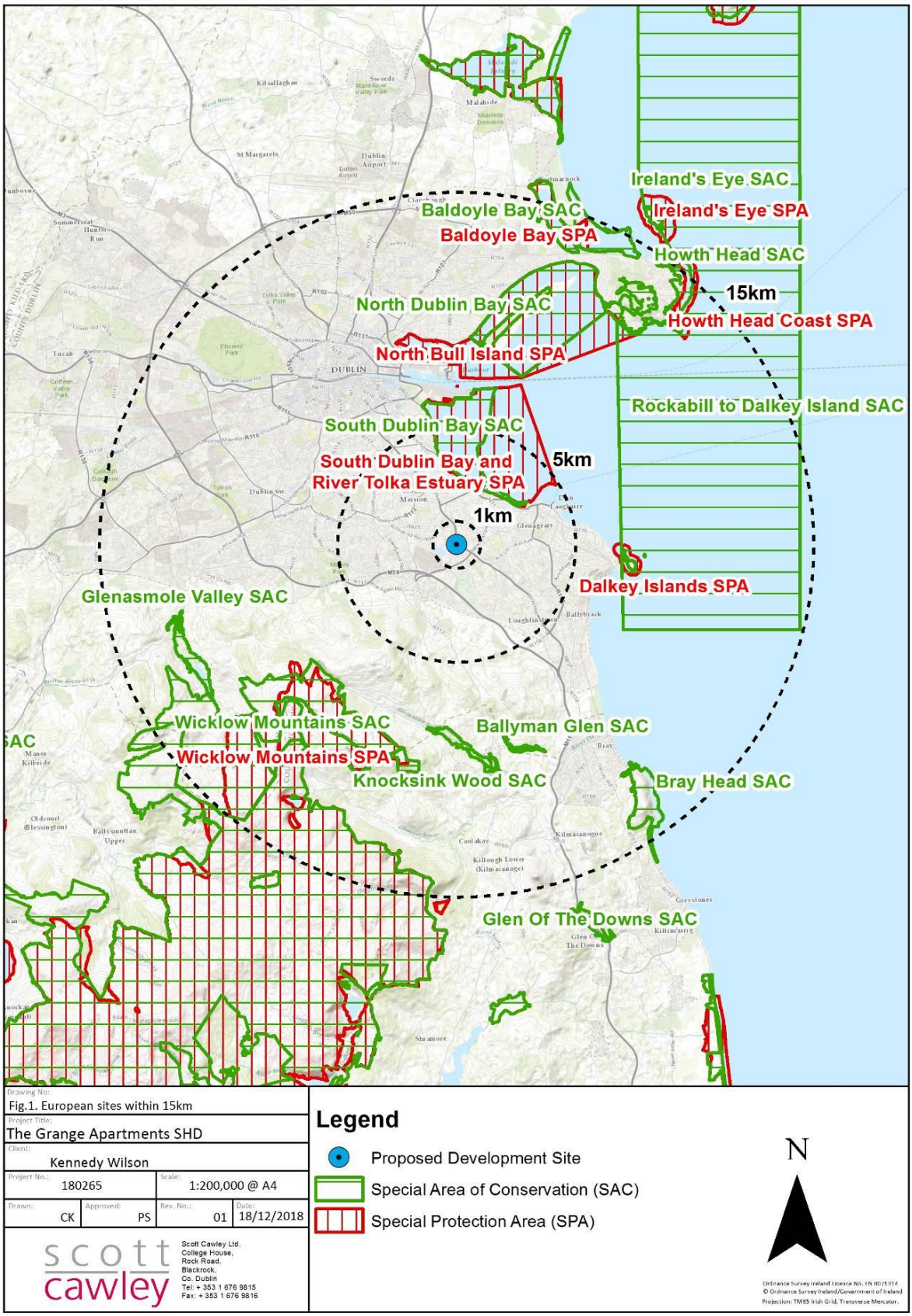

Figure 6.1: European Sites within 15km of the proposed development

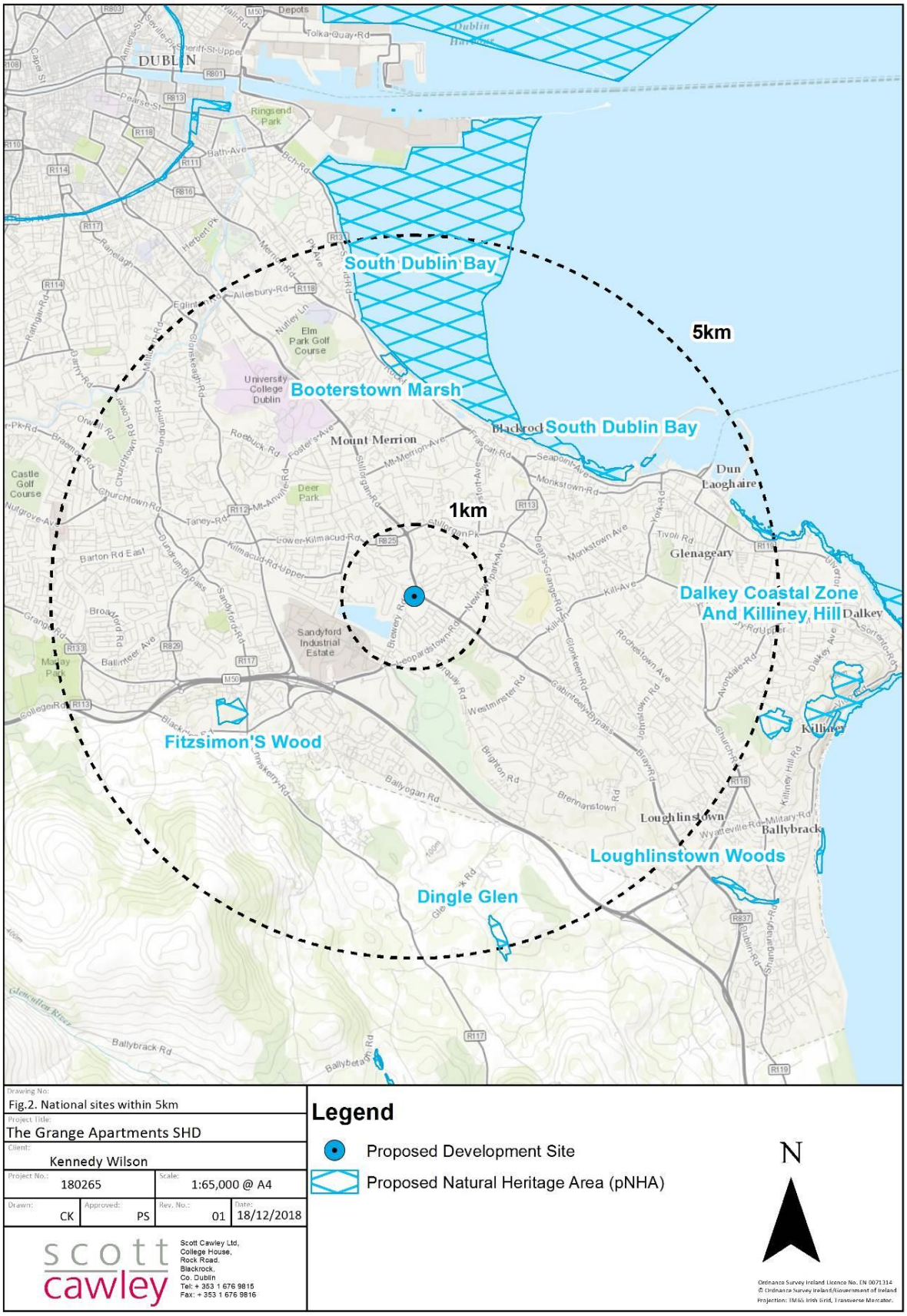

Figure 6.2: Proposed Natural Heritage Areas within 5km of the proposed development

Designated Site and Code	Distance from Proposed Development	Reasons for designation (*= Priority Habitat)
		Special Area of Conservation (SAC)
Glenasmole Valley SAC (001209)	Located *c.* 7.3km south of the subject lands.	**Generic Conservation Objectives Version 6.0 (21/02/2018)** **Annex I Habitats :** Semi-natural dry grasslands 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]
Rye Valley/Carton SAC	Located *c.* 9.1km north-west of the subject lands.	**Generic Conservation Objectives Version 6.0 (21/02/2018)** **Annex I Habitats:** • Petrifying springs with tufa formation (*Cratoneurion*) [7220] **Annex II Species:** • Narrow-mouthed Whorl Snail *Vertigo angustior* [1014] • Desmoulin's Whorl Snail *Vertigo moulinsiana* [1016]
Wicklow Mountains SAC (002122)	Located *c.* 9.7km south of the subject lands.	**Conservation Objectives Version 1.0 (31/07/2017)** **Annex I Habitats:** • Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110] • 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]

Designated Site and Code	Distance from Proposed Development	Reasons for designation (*= Priority Habitat)
		• 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] **Annex II Species :** • *Lutra lutra* (Otter) [1355]
South Dublin Bay SAC (000210)	Located *c.* 10.8km east of the subject lands.	**Conservation Objectives Version 1.0 (22/08/13)** **Annex I Habitats:** • Mudflats and sandflats not covered by seawater at low tide [1140] • Annual vegetation of drift lines [1210] • Salicornia and other annuals colonising mud and sand [1310] • Embryonic shifting dunes [2110]
North Dublin Bay SAC (000206)	Located *c.* 13.1km north-east of the subject lands.	**Conservation Objectives Version 1.0 (06/11/2013)** **Annex I Habitats:** • Mudflats and sandflats not covered by seawater at low tide [1140] • Annual vegetation of drift lines [1210] • Salicornia and other annuals colonising mud and sand [1310] • Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] • Mediterranean salt meadows (Juncetalia maritimi) [1410] • Embryonic shifting dunes [2110] • Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120] • Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] • Humid dune slacks [2190] **Annex II Species :** • *Petalophyllum ralfsii* (Petalwort) [1395]
Special Protection Area (SPA)		

Designated Site and Code	Distance from Proposed Development	Reasons for designation (*= Priority Habitat)
Wicklow Mountains SPA (004040)	Located *c.* 10.6km south-east of the subject lands.	**Generic Conservation Objectives Version 6.0 (21/02/2018)** • Merlin (*Falco columbarius*) [A098] • Peregrine (*Falco peregrinus*) [A103]
South Dublin Bay and River Tolka Estuary (004024)	Located *c.* 10.8km east of the subject lands.	**Conservation Objectives Version 1.0 (09/03/15)** • Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] • Oystercatcher (*Haematopus ostralegus*) [A130] • Ringed Plover (*Charadrius hiaticula*) [A137] • Grey Plover (*Pluvialis squatarola*) [A140] • Knot (*Calidris canutus*) [A143] • Sanderling (*Calidris alba*) [A144] • Dunlin (*Calidris alpina*) [A149] • Bar-tailed Godwit (*Limosa lapponica*) [A157] • Redshank (*Tringa totanus*) [A162] • Black-headed Gull (*Croicocephalus ridibundus*) [A179] • Roseate Tern (*Sterna dougallii*) [A192] • Common Tern (*Sterna hirundo*) [A193] • Arctic Tern (*Sterna paradisaea*) [A194] • Wetlands & Waterbirds [A999]
North Bull Island SPA (004006)	Located *c.* 13.1km north-east of the subject lands.	**Conservation Objectives Version 1.0 (09/03/15)** • Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] • Shelduck (*Tadorna tadorna*) [A048] • Teal (*Anas crecca*) [A052] • Pintail (*Anas acuta*) [A054] • Shoveler (*Anas clypeata*) [A056]

Designated Site and Code	Distance from Proposed Development	Reasons for designation (*= Priority Habitat)
		• Oystercatcher (*Haematopus ostralegus*) [A130] • Golden Plover (*Pluvialis apricaria*) [A140] • Grey Plover (*Pluvialis squatarola*) [A141] • Knot (*Calidris canutus*) [A143] • Sanderling (*Calidris alba*) [A144] • Dunlin (*Calidris alpina*) [A149] • Black-tailed Godwit (*Limosa limosa*) [A156] • Bar-tailed Godwit (*Limosa lapponica*) [A157] • Curlew (*Numenius arquata*) [A160] • Redshank (*Tringa totanus*) [A162] • Turnstone (*Arenaria interpres*) [A169] • Black-headed Gull (*Chroicocephalus ridibundus*) [A179] • Wetland and Waterbirds [A999]
Proposed Natural Heritage Area (pNHA) within 5km of proposed development site		
Booterstown Marsh pNHA (001205)	Located c.3.1km to the north of the subject lands	Booterstown Marsh is the only saltmarsh in south Dublin and, despite some concerns about the increasing salinity of the site, it remains a valuable habitat for many birds as well as containing a diverse flora including the protected plant Borrer's Saltmarsh-grass (*Puccinellia fasciculata*).
Fitzsimon's Wood pNHA (001753)	Located c. 2.9km to the south-west of the subject lands	Fitzsimon's Wood is of ecological importance as an example of basic woodland structure and the fact that birch woodland is very rare in Co. Dublin.
Dingle Glen pNHA (001207)	Located c. 4.5km south-east of the subject lands	The importance in this site lies in the variety of habitats within a relatively small area. The site is secluded and not subject to much disturbance.
Dalkey Coastal Zone & Killiney Hill pNHA (001206)	Located c. 4.5km to the north-east of the subject lands	This site represents a fine example of a coastal system with habitats ranging from the sub-littoral to coastal heath. The flora is well developed and includes some scarce species. The islands are important bird sites. The site also has geological importance.
South Dublin Bay pNHA (000210)	Located c.2.6km to the north-east of the subject lands	As per South Dublin Bay SAC (000210) and South Dublin Bay and River Tolka Estuary SPA (004024), above.

Table 6.5 - European designated sites located within 15km of proposed development site and proposed Natural Heritage Area sites within 5km of proposed development site.

Records of Protected, and Red-Listed Flora and Fauna species

Distribution records for rare / protected species within 2km of the proposed development site were obtained from the online National Biodiversity Data Centre (NBDC), on the 30th July 2019[14]. Records for rare and protected species, held by NPWS, were obtained from the NPWS online mapviewer for the hectad within which the proposed development site is located (O03) on the 30th July 2019[15]. The results are shown below in Table 6.6.

[14] National Biodiversity Data Centre www.biodiversityireland.ie Accessed 30th July 2019
[15] NPWS online mapviewer http://webgis.npws.ie/npwsviewer/ Accessed 30th July 2019

Records of Protected, Rare and other Notable Flora and Fauna Species within 10km or 2km of the Site				
Common Name	**Scientific Name**	**Protection[16]**	**Red-Listing Status[17]**	**Nearest Location**
Flora				
Basil Thyme	*Acinos arvensis*	FPO	Vulnerable	(O2020) (no date)
Red Hemp Nettle	*Galeopsis angustifolia*	FPO	Vulnerable	Ballycorus (O2020) (1943)
Tufted Salt-marsh Grass	*Puccinellia fasciculata*	FPO	Near Threatened	Blackrock (O2020) (1889)
Lesser Snapdragon	*Misopates orontium*	FPO	Endangered	O22 (1920)
Fauna				
Otter	*Lutra lutra*	WA, HD II, IV	Near Threatened	Kiltiernan (1993)
Sika Deer	*Cervus nippon*	WA	n/a	Kiltiernan (1993)
Red Squirrel	*Sciurus vulgaris*	WA	Near Threatened	Kiltiernan (1993)
Common Frog	*Rana temporaria*	WA, HD V	Least Concern	Within 2km of the proposed development site (2015)
Smooth Newt	*Lissotriton vulgaris*	WA	Least Concern	Within 2km of the proposed development site (2011)
Common Linnet	*Carduelis cannabina*	WA	Amber listed under BoCCI	Within 2km of the proposed development site (2012)
Common Wood Pigeon	*Columba palumbus*	WA, BD II, III	Green listed under BoCCI	Within 2km of the proposed development site (2016)
Mew Gull	*Larus canus*	WA	Amber listed under BoCCI	Within 2km of the proposed development site (2016)

[16] HDII/IV/V = Habitats Directive Annexes II/IV/V; FPO = Flora Protection Order; WA = Wildlife Acts; BD I = Birds Directive Annex I.

[17] Mammal Red-list from Marnell *et al*., 2009. Birds from *Birds of Conservation Concern in Ireland 2014–2019* (Colhoun & Cummins, 2013); Vascular Flora from the Irish Red List No. 1 Vascular Plants (Wyse-Jackson et al., 2016), Fish, Amphibians and Reptiles from (King *et al*., 2011); Bryophytes Red List from Lockhart *et. al.* 2012; Cetaceans conservation status from NPWS (2013b).

Rock Pigeon	*Columba livia*	WA, HD II	Green listed under BoCCI	Within 2km of the proposed development site (2016)
Leisler's Bat	*Nyctalus leisleri*	WA, HD IV	Near Threatened	Within 2km of the proposed development site (2006)
Common Pipistrelle	*Pipistrellus pipistrellus*	WA, HD IV	Least Concern	Within 2km of the proposed development site (2006)
Soprano Pipistrelle	*Pipistrellus pygmaeus*	WA, HD IV	Least Concern	Within 2km of the proposed development site (2006)
European Hedgehog	*Erinaceus europaeus*	WA	Least Concern	Within 2km of the proposed development site (2011)
Gooden's Nomad Bee	*Nomada goodeniana*	N/A	Endangered	Within 2km of the proposed development site (1894)
Large Red Tailed Bumble Bee	*Bombus (Melanobombus) lapidarius)*	N/A	Near Threatened	Within 2km of the proposed development site (2016)
Panzer's Nomad	*Nomada panzeri*	N/A	Near Threatened	Within 2km of the proposed development site (1894)
Invasive Species				
Japanese Knotweed	*Fallopia japonica*	N/A	High Impact Invasive Species	Within 2km of the proposed development site (2018)
Grey Squirrel	*Sciurus carolinensis*	N/A	High Impact Invasive Species	Within 2km of the proposed development site (2016)
New Zealand flatworm	*Arthurdendyus triangulatus*	N/A	High Impact Invasive Species	Within 2km of the proposed development site (1993)

Table 6.6 - Records of Protected, Rare and Other Notable Fauna

Likelihood of Occurrence of Protected Species within Proposed Development

Flora[18]

The subject lands fall within the Rathdown district (District 8) described in the Flora of County Dublin (Doogue et al, 1998). While much of the eastern half of this district, within which the proposed development site is located, is now built-up, several areas of botanical interest are located in close proximity to the proposed development site. Fitzsimon's Wood is located near Sandyford and is largely comprised of birch woodland, with Downy Birch *Betula pubescens* being the dominant species. Further south, Dingle Glen is an area of dense scrub woodland. Species found here include Hazel *Corylus avellana* and Spindle *Euonymus europaeus*, as well as three uncommon plants; Climbing Corydalis *Ceratocapnos claviculata*, Hairy Wood-rush *Luzula pilosa* and Wood Melick *Melica uniflora*. Druid's Glen near Carrickmines consists of mature woodland including large Oaks *Quercus* sp., Elm *Ulmus* sp., Beech *Fagus sylvatica*, Pine *Pinus* sp. and Sycamore *Acer pseudoplatanus*. Finally, the gravel car park at Leopardstown Race Course, which was partially built over in 1996, is also of botanical interest. Species recorded here include Rue-leaved Saxifrage *Saxifraga tridactylites*, Long-stalked Crane's-bill *Geranium columbinum*, Small Toadflax *Chaenorhinum minus*, Squirreltail Fescue *Vulpia bromoides* and Rat's-tail Fescue *Vulpia myuros*. It is thought that these species may have been introduced with limestone chippings used to surface the car park. Moschatel *Adoxa moschatellina* and Blue Anemone *Anemone apennina* are known to be naturalised in adjacent woodland. None of the aforementioned species were identified during a site visit in February 2019, and it is considered unlikely that they occur due to the nature of the site and its location in the wider environment (along the N11 and Brewery Road). Similarly, it is considered highly unlikely that any of the rare flora listed in Table 6.6, above, would occur in the subject lands.

Fauna

It is considered unlikely that protected mammal fauna such as otter would occur within the proposed development site. This is due to the absence of any suitable habitat for foraging purposes. It is possible that badger, legally protected in Ireland under the Wildlife Acts, would frequent the site due to the presence of areas of grassland which may be potentially suitable for foraging purposes. It is highly likely that foxes, which are not legally protected in Ireland, use the proposed development site for foraging and commuting purposes.

In terms of avian fauna, it is considered likely that bird species on site are limited to common passerine species and species typical of suburban areas, which can tolerate a high degree of disturbance and noise. The site's potential to support breeding birds is considered to be high, owing to the substantial amount of suitable vegetation present on site.

Field survey results

Habitat and Flora Survey

The following habitat types (following Fossitt 2000) were identified within the proposed development site (see Figure 6.4 overleaf for habitat map).

- Buildings and Artificial Surfaces (BL3);
- Stonewalls & other Stonework (BL1);
- Spoil & Bare Ground (ED2);
- Recolonising Bare Ground (ED3);
- Refuse and Other Waste (ED5);
- Amenity Grassland (GA2);

[18] Habitat Preferences and distribution data from Parnell & Curtis (2012), Curtis & McGough (2005), Doogue *et al.* (1998), and the online atlas of the British and Irish Flora https://www.brc.ac.uk/plantatlas/ Accessed 3rd May 2016.

- Flower Beds and Borders (BC4);
- Scrub (WS1);
- Ornamental/ Non-native Shrub (WS3);
- Hedgerow (WL1); and;
- Treeline (WL2); and;
- Mixed Broadleaved Woodland (WD1).

Buildings and Artificial Surfaces (BL3)

All hard surfaces and buildings contained within the subject lands were classified under this habitat type. This included the main access road into the existing residential complex, known as The Grange apartments, the residential dwelling along Brewery Road (known as The Lodge), the two-storey red brick office building (Oak Tree Business Centre) and surrounding hard surfaces, the former marketing suite buildings and the four cottages fronting onto N11. A number of portacabin structures were also present within the subject lands and these were also classified as buildings and artificial surfaces. Very little vegetation is present in this habitat and it is limited to gaps/cracks within hardstanding surfaces e.g. kerbsides and unmaintained paving/ hardstanding. Where vegetation does occur, it is limited to opportunistic species such as Ivy-leaved Toadflax Cymbalaria muralis, Butterfly Bush Buddleja davidii, Groundsel Senecio vulgaris and bryophyte species. This habitat type occurs in a mosaic with flower beds and borders (BC4) in the southern portion of the site where the subject lands bound the existing residential complex.

Plate 6.1 - Existing 2-storey office building.

Plate 6.2 - Existing Marketing Suite.

Plate 6.3 - Rear view of derelict cottages along N11.

Plate 6.4 - Example of portacabin structure.

Stonewalls & other Stonework (BL1)

Stonewalls are present in three places within the boundaries of the subject lands; around the boundary of the existing office campus; forming the boundary of the site along the N11; and; a small stonewall runs through the centre of the large portion of the site to the east (see Figure 6.4 for clarity). Vegetation on stonewalls is limited and many are simply covered with Ivy *Hedera helix*.

Spoil & Bare Ground (ED2)

Unconsolidated, largely unvegetated surfaces are present in the northern portion of the site, where the area was previously used to store materials and construction waste arising from the development of the existing residential complex to the south-east of the subject lands. These surfaces appear to be driven over regularly, thereby preventing colonisation by opportunistic plant species. Another area of bare ground is present close to the site's boundary along Brewery Road where a portacabin structure has recently been removed, revealing a patch of bare ground beneath.

Plate 6.5 - Area of spoil and bare ground (consolidated gravel).

Recolonising Bare Ground (ED3)

Recolonising bare ground is frequent in the more disturbed areas contained within the site boundary. These disturbed areas have been colonised by opportunistic plant species and vegetation cover is greater than 50%. Species present in these areas include Butterfly Bush *Buddleja davidii*, Broad-leaved Dock *Rumex obtusifolius*, Red Fescue *Festuca rubra*, Groundsel *Senecio vulgaris*, Tutsan *Hypericum androsaemum*, Toad Rush *Juncus bufonius*, Pendulous Sedge *Carex pendula* and Willowherb species *Epilobium* spp. This habitat type also occurs in mosaics with refuse and other waste (ED5) and scrub (WS1).

Refuse and Other Waste (ED5)

Areas of refuse and other waste frequently occur in the northern portion of the site. Here, large areas of building waste are found, comprising excess construction materials such as paving slabs, wooden pallets, windows, blocks etc. In addition, a large amount of domestic waste appears to have been dumped on site relatively recently and evidence of scavenging by foxes was recorded. In some cases, opportunistic plant species such as Willowherb species, Butterfly Bush, Tutsan, Cleavers *Galium aparine*, Broad-leaved dock and Dandelion *Taraxacum officinale* agg. have started to colonise these areas. Such areas have been mapped as a mosaic with recolonising bare ground (ED3).

Plate 6.6 - Example of building waste and construction materials on site.

Amenity Grassland (GA2)

Areas of amenity grassland occur in numerous locations across the subject site. These are areas of improved, species-poor grassland which are managed for amenity value. They are generally seeded areas and are regularly mown to maintain a short sward. Species composition is typical of this habitat type and is dominated by grasses such as Perennial Ryegrass *Lolium perenne*, Red Fescue and Bent species *Agrostis* spp. Yorkshire Fog *Holcus lanatus* is occasionally present. Herb species present include White Clover *Trifolium repens*, Creeping Buttercup *Ranunculus repens*, Dandelion and Daisy *Bellis perennis*. In more shaded areas, a thick moss layer is also present.

Plate 6.7 - Amenity grassland in the south of the site.

Plate 6.8 - Amenity grassland alongside the office building

Flower Beds and Borders (BC4)

Areas of flower beds and borders occur along the access road and pavements which lead to the existing residential development. Borders also occur around the office block. Species recorded in these maintained borders include Rosemary *Rosmarinus officinalis*, Lavender *Lavandula* spp., Lesser Periwinkle *Vinca minor*, Heather *Erica* spp., Cotoneaster species *Cotoneaster* spp. and Hebe species *Hebe* spp. Weed species recorded include Bramble *Rubus fruticosus* agg. and Lesser Celandine *Ficaria verna*. This habitat type often occurs in mosaics with ornamental/ non-native shrub (WS3), and buildings and artificial surfaces (BL3), where it occurs along pathways and hard standing.

Scrub (WS1)

Areas of scrubby vegetation commonly occur in the more disturbed area to the north-east. Scrub vegetation included Bramble, Butterfly Bush, Willowherb species, Broad-leaved Dock, Holly *Ilex aquifolium* and Creeping Thistle *Cirsium arvense*. Occasionally this habitat type occurred in mosaics with the following habitat types; ornamental/ non-native shrub (WS3), recolonising bare ground (ED3) and refuse and other waste (ED5).

Ornamental/ Non-native Shrub (WS3)

There are numerous areas throughout the site which consist of ornamental shrubs. Some of these areas are overgrown shrub borders, planted with non-native species for aesthetic value. In addition, dense stands of the highly invasive Japanese Knotweed *Fallopia japonica* were also categorised as ornamental/ non-native shrub. Other species commonly found in this habitat type include Hebe species, Cherry Laurel *Prunus laurocerasus*, Winter Heliotrope *Petasites fragrans*, Portuguese Laurel *Prunus lusitanica* and 'Red Robin' *Photinia x fraseri*. This habitat type also occurs in mosaics with flower beds and borders (BC4), scrub (WS1), recolonising bare ground (ED3) and refuse and other waste (ED5).

Plate 6.9 - Stand of Japanese Knotweed, with Winter Heliotrope in the foreground.

Hedgerow (WL1)

There is one hedgerow on site. This is located in near the marketing suite building in the north-east of the site. The hedgerow is composed of Cherry Laurel and is likely a remnant of previous landscaping on site. It is of low ecological value.

Treeline (WL2)

A number of treelines exist on site, the most significant of which runs along the eastern boundary. This treeline is composed of species such as Walnut, Ash *Fraxinus excelsior* and Sycamore *Acer pseudoplatanus*. The treeline is divided by an area of recolonising bare ground and the portion of treeline to the north of this area is very short in length. Holly and Butterfly Bush are present at this point, with Winter Heliotrope dominating the field layer. The trees which make up this treeline were considered to have features which could be suitable for use by roosting bats e.g. knotholes and damaged limbs. A second treeline runs to the south of this, also along the site's eastern boundary. This treeline is composed of Griselinia *Griselinia littoralis*, a species which is normally associated with hedgerows rather than treelines. However, in this instance the Griselinia has grown to considerable height, and this feature is therefore considered to be a treeline. Lawson Cypress trees *Chamaecyparis lawsoniana*. run along the southern portion of this treeline. Another treeline is present along the stonewall (BL1) which runs through the centre of the more disturbed area of the overall site. This

treeline is composed of Wych Elm *Ulmus glabra* and Sycamore. Another treeline is present to the rear of The Lodge building and forms the boundary between the proposed development site and the adjacent public park. This treeline is composed of Cypress trees. Finally, a group of planted semi-mature trees are present along the east side of the stonewall to the rear of the two-storey office building. This is regarded as a very immature treeline and is similar to street planting in appearance with ornamental shrub species such as Lavender and Rhododendron *Rhododendron* spp. planted in beds below.

Plate 16.0 - Griselinia and Cherry Laurel Treeline.

Plate 6.11 - Treeline running along the eastern boundary.

Mixed Broadleaved Woodland (WD1)

A small vegetated area to the north of the existing access road was categorised as an area of mixed broadleaved woodland (WD1). The area comprises a small number of mature Beech trees with an understory of Holly, Bramble and non-natives including Butterfly Bush, Cherry Laurel and other ornamentals. Non-natives are also present in the ground flora e.g. Montbretia *Crocosmia x crocosmiiflora*. Native elements of the field layer include Ivy, Lords-and-Ladies *Arum maculatum* and Bluebells *Hyacinthoides non-scripta*. Landscaping waste was present in large mounds here.

A second area of mixed broadleaved woodland was identified to the south of The Lodge building near the main access road to The Grange complex. Tree species present in the canopy include Beech, Sycamore, Ash, Horse Chestnut *Aesculus hippocastanum*, Maple *Acer* sp. and Cypress. The understorey, which is quite dense in places, is composed of Cherry Laurel, Holly, Elm *Ulmus* sp., Elder *Sambucus nigra*, Hawthorn *Crataegus monogyna* and ornamentals. Ivy dominates the field layer and Bramble, Cleavers, Herb-robert *Geranium robertianum* and Winter Heliotrope are also present.

Plate 6.12 - View of mixed broadleaved woodland, showing understorey and landscaping waste

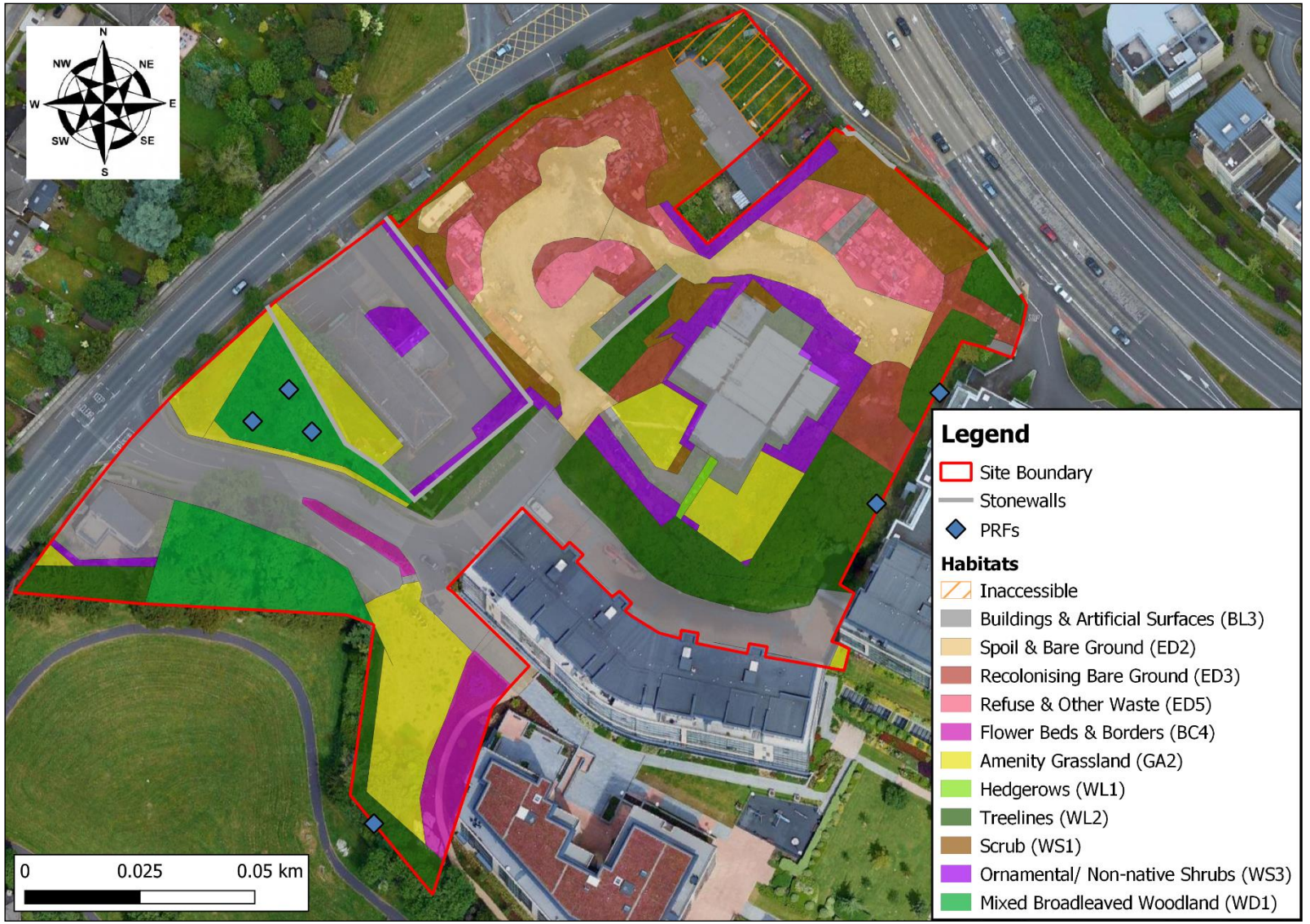

Figure 6.4 - Map showing the habitats within the proposed development site

Notable and Rare Flora

No protected, rare or flora species listed on the Irish Red List No. 10 for Vascular Plants (Wyse Jackson et al., 2016) were recorded.

Invasive Flora

Japanese Knotweed, a species which is listed on the Third Schedule of the *Birds and Natural Habitats Regulations S.I. No. 477/ 2011* (2011), was abundant on site (see Figure 4 above). Species listed under this Schedule are subject to Articles 49 and 50 of this legislation. Article 49 states that *"any person who plants, disperses, allows or causes to disperse, spreads or otherwise causes to grow"* any plant species listed in *"Part 1 of the Third Schedule shall be guilty of an offence"*. This places an onus on the land owner, or developer, to control the spread of such invasive species from their lands, and where possible to eradicate such species from their lands. Under Article 50 of the same legislation, *"a person shall be guilty of an offence if he or she has in his or her possession for sale, or for the purposes of breeding, reproduction or propagation, of offers or exposes for sale, transportation, distribution, introduction or release an animal or plant listed in Part 1 or Part 2 of the Third Schedule".* No other non-native invasive species, listed on the Third Schedule of the above-mentioned legislation, were recorded on site.

Other non-native species recorded on site include Butterfly Bush, Montbretia, Cherry Laurel, Rhododendron species, Winter Heliotrope and Cotoneaster species. These species are not listed under the Third Schedule of the *Birds and Natural Habitats Regulations* (2011) and therefore, there is no legal obligation for the applicant to address these species.

Japanese Knotweed and Cherry Laurel are regarded as a "high impact" invasive species[19] while Butterfly Bush, Winter Heliotrope and Cotoneaster are described as "medium impact" invasive species. According to the risk assessment undertaken by Invasive Species Ireland Montbretia is described as a "low impact" invasive species or possibly a species where data deficiencies do not allow for a comprehensive assessment. Rhododendron species range in their level of invasiveness- from "high impact" as in the case of *Rhododendron ponticum* to "low impact" e.g. *Rhododendron luteum*.

[19] According to the risk assessment undertaken by Invasive Species Ireland, species which score over 18 are regarded as being of high impact, those which score between 14-17 are regarded as being of medium impact and those which score between 0-13 are regarded as being of low impact.

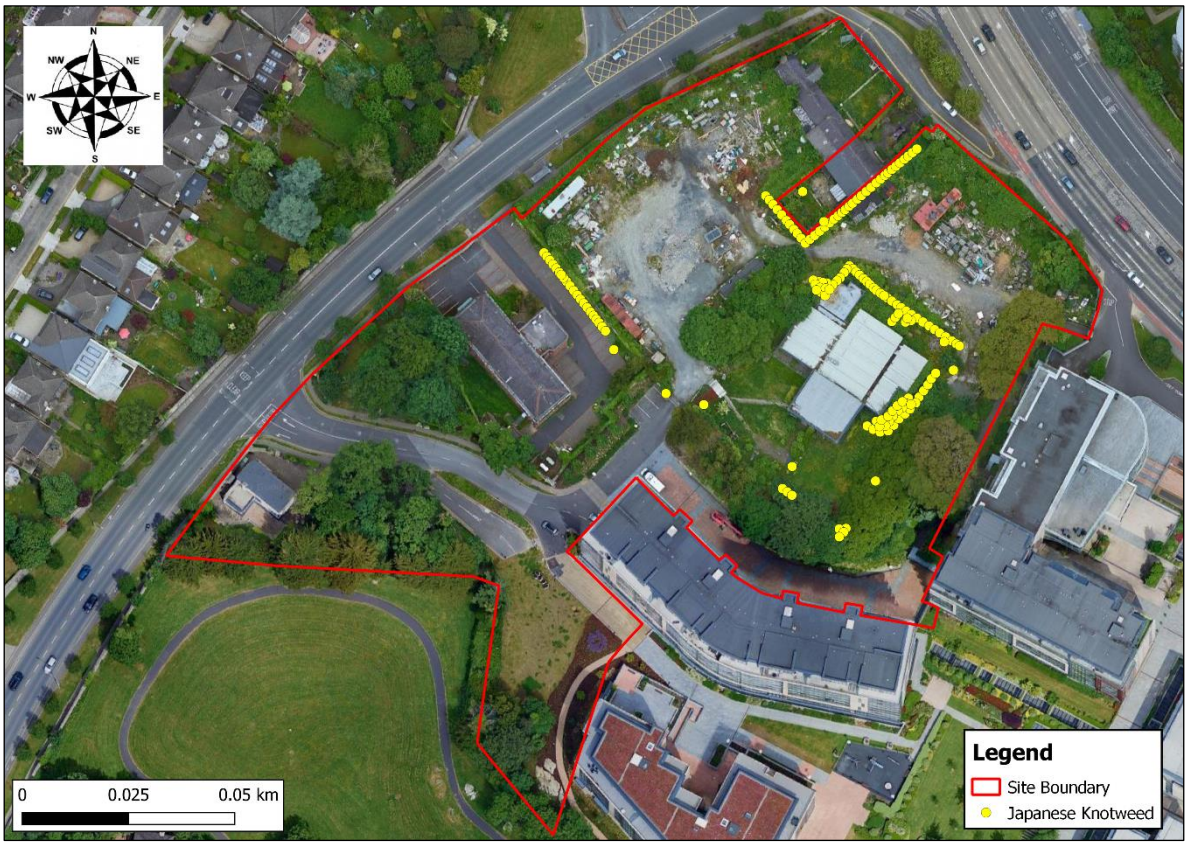

Figure 6.5 - Extent of Japanese Knotweed across the proposed development site

Fauna Survey Results

Mammals (Bats)

Building Inspections

The existing two-storey red brick office building was deemed to be largely unsuitable for roosting bats. The building is rather well maintained and was occupied up until relatively recently (1-2 years ago). No external access points were recorded, and no evidence of bat activity was noted inside the building. The associated boiler house was also examined and was deemed to have low potential to support roosting bats due to the fact that there were no visible access points from the exterior to the interior of the structure.

The marketing suite on site, which is associated with the original residential complex on site, was also deemed to be of largely unsuitable for roosting bats. No access points were recorded and there was no evidence of roosting bats internally.

The cottages along the N11, to the north-east of the site were deemed to be have high potential to support roosting bats, based on the results of the external inspection. There were clear access points such as missing slates in the roofs. No internal inspection was carried out in these cottages due to health and safety reasons. However, as the building inspections indicate that these buildings could be used by roosting bats, bat activity surveys, comprising dusk emergence and dawn re-entry surveys, were carried out in June/ July 2019 to determine whether local bats are indeed roosting in these cottages.

Finally, an external and internal inspection of the existing occupied house, known as The Lodge, which lies to the south of the access road concluded that this building was not likely to support roosting bats, due to the absence of visible entry points. It was deemed to be largely unsuitable for roosting bats.

To summarise, following completion of inspections of the buildings on site, to search for signs of bat activity/ usage, The Lodge, marketing suite and office block known as Oak West Business Centre were all deemed to have low potential to support roosting bats, and therefore one activity survey was carried out at each of these buildings. The existing cottages which front onto the N11 were deemed to have high potential to support roosting bats and therefore three activity surveys were carried out for these buildings.

Potential Bat Roosts (PBRs) (Trees)

Several trees within the proposed development site boundary exhibited features which could be used by roosting bats. These potential roost features comprised knotholes and cavities, dense ivy and damaged limbs. The location of these potential bat roosts (PBRs) is displayed on Figure 6.4. Examples of potential roost features identified are given in Plates 6.13-16 below:

Plate 6.13 - Suitable Beech trees with potential roost features- knotholes, damaged bark and dense ivy.

Plate 6.14 - Beech with damaged limbs, creating a potential roost feature.

Plate 6.15 - Dense Ivy on a mature Sycamore.

Plate 6.16 - Group of Suitable Mature trees with knotholes and cavities present along the eastern boundary.

Bat Activity Surveys

The first bat activity survey carried out at the proposed development site consisted of a dusk emergence survey on 27th June 2019. The existing cottages along the N11 and the marketing suite for the wider Grange development were monitored during this survey. The first bat recorded on site was a Common Pipistrelle *Pipistrellus pipistrellus*, recorded at 22:10. The last bat recorded was also a Common Pipistrelle, recorded at 23:53. Bat species recorded over the course of the survey were limited to Common Pipistrelle and Leisler's bat *Nyctalus leisleri*. No bats were observed emerging from any of the buildings on site.

The second bat activity survey consisted of a dawn re-entry survey and was carried out on the morning of the 12th July 2019 and involved monitoring the office block building known as Oak Tree Business Centre and the existing cottages which front onto the N11. The first bat recorded during monitoring of the existing office building on site was a Common Pipistrelle bat, recorded at 04:01, and the last bat recorded during the survey was a Leisler's bat, recorded at 04:43. Activity surrounding the office building was deemed to be low. Intermittent foraging activity was noted in the wooded area to the south of The Lodge building. Leisler's bats were observed flying at height above the site. Common Pipistrelle bats were observed foraging along the amenity grassland area to the west of the office building. Generally foraging activity was highest along the vegetated boundaries. No bats were recorded re-entering the office building. Regarding monitoring of the existing cottages along the N11 the first bat recorded was a Leisler's bat, recorded at 03:04. Only Leisler's bats were recorded during the survey of the cottages and the last recording was made at 04:55. No bats were observed re-entering the cottage buildings.

The final bat activity survey was carried out on the 25th July and comprised a dusk emergence survey, focusing on The Lodge building and existing cottages which front onto the N11. Regarding The Lodge the first bat recorded was a Leisler's bat at 21:41. The last bat recorded was a Common Pipistrelle bat at 23:00. Individual Leisler's bats were observed commuting over the house and travelling in a north-east direction. Foraging activity was also recorded along the treeline and parkland to the east and south. Common pipistrelle bats were recorded flying up and down the south-east side of the building in a repeated fashion. Common Pipistrelle bats were also recorded flying around the rear of the house and associated garden. They were also noted to be flying along both sides of Brewery Road, seemingly associated with the street planting. No bats were observed emerging from The Lodge building and it is not deemed to be a bat roost. No bats were recorded emerging from the existing cottages which front the N11 during their final survey either. The area by the existing cottages was very quiet on the night of the survey with very little bat activity recorded. The first bat recorded was a Leisler's bat, recorded at 21:41. Leisler's bats were recorded commuting and foraging over the site. The last bat recorded was also a Leisler's bat, recorded at 22:35. The results of the bat surveys are displayed in Figure 6.6.

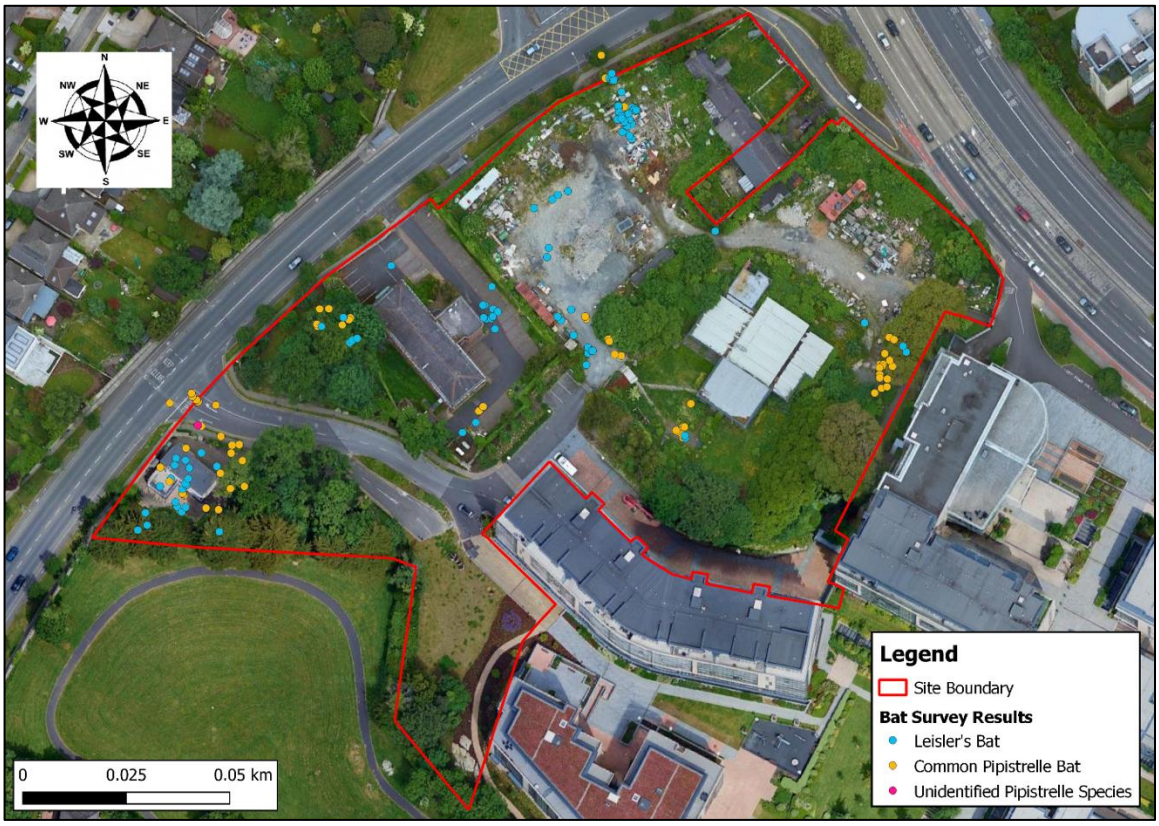

Figure 6.6 - Results of bat surveys carried out at the proposed development site

Mammals (Other)

Despite a dedicated badger survey being carried out, no evidence of badger activity was recorded within the subject lands (i.e. setts, tracks, paths, latrines or feeding signs). Likewise, no evidence of otter (i.e. spraints, couches or holts) was recorded within or directly adjacent to the subject lands. Fox are known to use the site and evidence of same was abundant in the form of feeding remains, odour and tracks. A young fox was sighted during one of the dusk bat activity surveys in June 2019. Foxes are not protected in Ireland.

Birds

All wild birds and their nests are protected under the Wildlife Acts. During the initial multidisciplinary survey (6th February 2019), bird activity on site was quite low and this may be due to the time of year- surveys were conducted in February which lies outside the breeding bird season (generally taken as 1st March- 31st August inclusive). Bird species recorded during the survey on 6th February 2019 comprised Robin *Erithacus rubecula*, Blackbird *Turdus merula*, Wood Pigeon *Columba palumbus*, Magpie *Pica pica*, Great Tit *Parus major*, Wren *Troglodytes troglodytes* and Hooded Crow *Corvus cornix*. All of the above bird species are "Green listed species" i.e. they are not species of conservation concern, except for Robin, which is an "Amber listed species".

Additional bird species recorded during the two dedicated breeding bird surveys on 27th June and 5th July 2019 include Blue Tit *Cyanistes caeruleus*, Coal Tit *Periparus ater*, Goldfinch *Carduelis carduelis*, Grey Wagtail *Motacilla cinerea*, House Martin *Delichon urbicum*, Mistle Thrush *Turdus viscivorus*, Rook *Corvus frugilegus* and Swift *Apus apus*. House Martin, Swift and Mistle Thrush are all "Amber-listed species", while Grey Wagtail is a "Red-listed species". All other birds recorded during the breeding bird surveys are "Green-listed species". The results of the dedicated breeding bird surveys are displayed in Figure 6.7.

There is suitable breeding bird habitat on site owing to the stands of dense vegetation and scrub as well as the presence of some mature trees. The site certainly supports breeding birds with Grey Wagtail, Mistle Thrush and Blue Tit all confirmed to be breeding on site. Of the species recorded, the following are thought to be "probable breeders"; Robin, Blackbird, Great Tit, Wren, Coal Tit and Goldfinch.

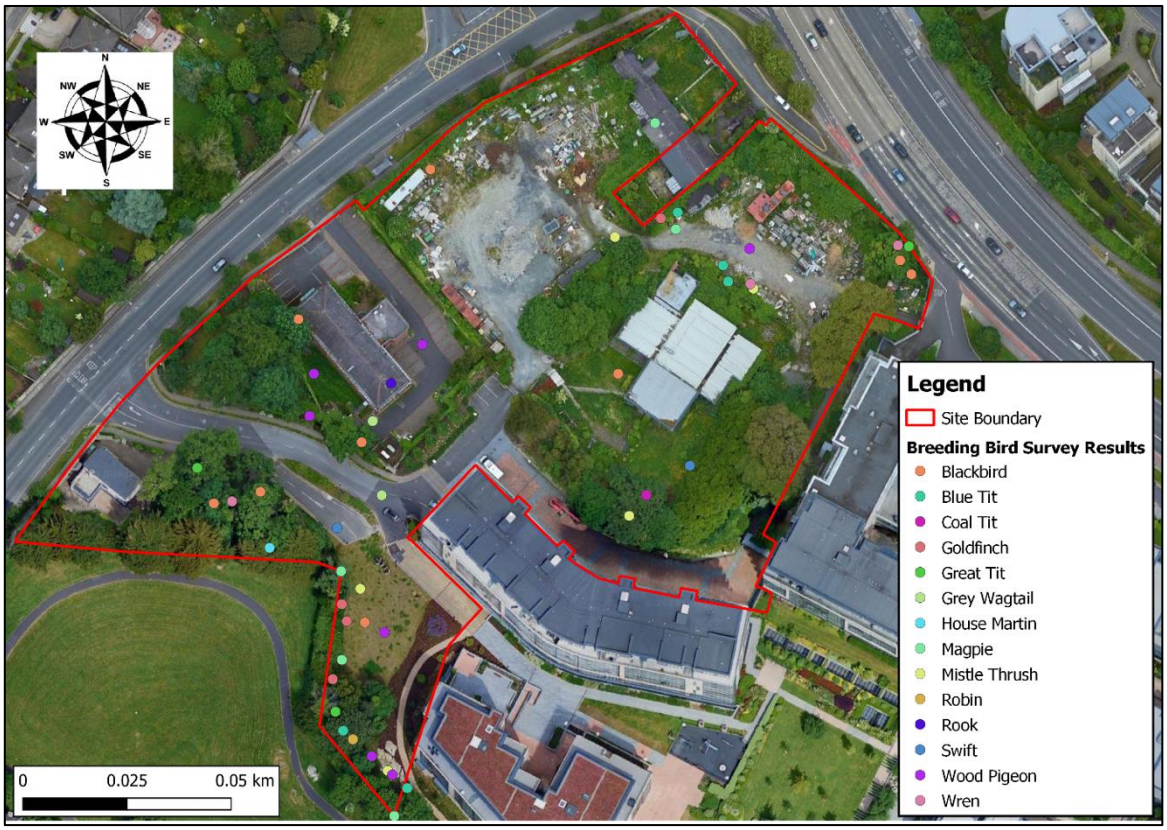

Figure 6.7 - Results of Breeding Bird Surveys in June/ July 2019

Summary of Ecological Evaluation

Table 6.7 summarises all identified Key Ecological Receptors. Key Ecological Receptors have been identified as at risk of potentially significant impacts via a source-pathway-receptor link. KER's are valued as Local Importance (Higher Value) or above as per the criteria set out in Appendix 6B.

Habitat / Species	Highest Ecological Valuation Level	Key Ecological Receptor?
Designated Sites		
Designated Sites	National-International	No
Protected Species		
Potential Breeding Birds	Local Importance (Higher Value)	Yes
Potential Roosting/Foraging/Commuting Bats	Local Importance (Higher Value)	Yes
Habitats & Flora		
Buildings and Artificial Surfaces (BL3)	Local Importance (Lower Value)	No
Stonewalls & other Stonework (BL1)	Local Importance (Lower Value)	No
Ornamental/ Non-native Shrub (WS3)	Local Importance (Lower Value)	No
Spoil and Bare Ground (ED2)	Local Importance (Lower Value)	No
Recolonising Bare Ground (ED3)	Local Importance (Lower Value)	No
Refuse and Other Waste (ED5)	Local Importance (Lower Value)	No
Amenity Grassland (GA2)	Local Importance (Lower Value)	No
Flower Beds and Borders (BC4)	Local Importance (Lower Value)	No
Scrub (WS1)	Local Importance (Lower Value)	No
Hedgerow (WL1)	Local Importance (Lower Value)	No
Treeline (WL2)	Local Importance (Higher Value)	Yes
Mixed Broadleaved Woodland (WD1)	Local Importance (Lower Value)	No
Entire Site	**Local Importance (Higher Value)**	

Table 6.7 - Ecological Evaluation of Key Ecological Receptors (Highlighted in grey)

6.4 Characteristics of the Proposed Development

In summary, the project provides for the demolition (total c.1,398 sq m GFA) of:

- The Grange Select Marketing Suite' (1 storey)
- 'Oaktree Business Centre' (2 storeys)
- 'The Lodge' (2 storeys)

and the construction of a new 'Build to Rent' residential scheme of 287 residential apartment units; residential tenant amenity space of 961.5 sq m; a crèche facility of 658 sq m; and a substation of 96.5 sq m in the form of 6 new blocks (Blocks H, J, M, N, P and Q) ranging in height from 1 - 11 storeys. The residential element of the scheme provides for the following development mix:

- 19 x Studio Units (6.6%)
- 125 x 1 Bedroom Units (43.6%)
- 143 x 2 Bedroom Units (49.8%)

A total of 100 no. car parking spaces, 596 no. cycle spaces and 5 no. motorcycle spaces are also proposed together with all associated site development works.

It is not envisaged that the development will require any blasting or piling. It is proposed to deliver the proposed development in a single phase with a construction duration of *c.* 30 months.

The existing site drains surface water, unrestricted, to a culverted section of Brewery Stream which lies along Brewery Road. It is proposed that the proposed development will attenuate the surface water on site before discharging it, at a restricted rate, via two outfalls, to the same culverted section of the Brewery Stream.

Dun-Laoghaire – Rathdown County Council requires that post-development run-off rates are limited to greenfield run-off rates for the site. The greenfield run-off rate for the whole site has been calculated as 5.65 l/s (Qbar).

Therefore, it is proposed to limit the discharge from the site to 5.65l/s by providing Sustainable Urban Drainage System (SUDs), connected to two outfalls each served by a Hydrobrake. This will greatly

reduce the run-off from site, reducing the impact of the proposed development on the surrounding environment and reducing the risk of the public sewer surcharging during high storm events.

The SUDs techniques to be employed across the proposed development site are set out below:

- **Green Roofs:** Green roofs have been incorporated into the development proposals (please see Waterman Moylan SUDS Drawing 18-093- P205 for the proposed locations of green roofs). Green roofs improve the water quality of discharged surface water through the filtration of pollutants during the process of water infiltration. In addition, they reduce the rates of discharge, through the time it takes for surface waters to infiltrate and permeate the substrate. Finally, the volume of discharge is reduced through attenuation in the growing medium and evapotranspiration.
- **Permeable Paving:** Permeable paving will be used on both the podium levels and creche carpark. This will provide interception treatment to surface water run-off and reduce the volume of run-off to by discharged into the public system. Pollutants which may be present in the surface water (e.g. hydrocarbons etc), will be retained on the pavement surface or flushed into the granular sub base where they become trapped and degrade over time. In the car parking area, instead of infiltrating, the permeable paving sub-base will be used for attenuation purposes. A perforated pipe will be included in the sub- base to convey surface water to the attenuation tank via a swale.
- **Attenuation Tank:** It is proposed to provide attenuation in a concrete tank below the basement car-park for the apartment blocks to the north-east of the access road and a portion of the access road and pavement. In addition, a modular attenuation tank will be provided to the south-west of the access road in front of Block N, to serve the creche, realigned access road and Block N.
- **Swales:** A number of swales will be created on site to improve the quality and reduce the volume of water to be discharged into the public surface water sewer. Please see Waterman Moylan Drainage Layout Level 01 Drawing 18-093 P201 for the locations of the proposed swales.
- **Petrol Interceptor:** In the basement carpark area, any rainwater entering the system as a result of snow melt or raindrops from cars will pass through a petrol interceptor prior to release to the wider surface water system. Another petrol interceptor will be provided before the attenuation tank.

It is proposed that the surface water run-off from the proposed development will drain via gravity to the culverted Brewery Stream, located on Brewery Road. Strict separation of surface water and wastewater will be implemented within the development.

An existing 225mm diameter foul sewer is located on Brewery Road which drains the residential properties along this road. There is also an existing private foul sewer within the site which serves the existing Grange development to the south of the proposed development. The proposed development will result in an increase in foul loadings generated on site. The predicted Population Equivalent (P.E.) following completion of the proposed development is 912.9 P.E. It is proposed that all foul waters generated by the proposed development will drain by gravity to the existing on-site private drainage system, or directly to the public foul sewer located on Brewery Road. The on-site foul water drainage also discharges to the public sewer on Brewery Road. Foul waters from the proposed development will be directed to the West Pier Pumping Station, from which it is pumped to Ringsend WWTP for treatment, prior to ultimate discharge into Dublin Bay.

Landscaping proposals include a tree replacement strategy, whereby semi-mature beech, oak and rowan trees will be planted, in place of trees which must be removed as part of the development proposals. It is proposed that 100 no. replacement trees will be required. These trees should grow to large sizes in maturity and will provide a "green corridor" through the development. In general, there is a strong emphasis on native species, regarding tree planting but non-natives such as beech are also included, to link into the existing vegetation. Tree planting around the perimeter will comprise large scale trees, with smaller multi-stemmed trees proposed within the site and at podium level. The field layer of existing clusters of trees will be planted with a woodland understorey mix including ferns, *Geranium* species and *Anemone* species.

Green roofs will comprise Irish grown sedum planting matts and will be laid on a lightweight growing medium e.g. cocomat and geotextile weave. The matts will comprise various *Sedum* species including *Sedum album* 'Coral Carpet', *Sedum acre* 'Aureum' and *Sedum hispanicum*.

Proposed swales will be planted with a wetland wildflower mix (EC05 Wetland Wild Flora by www.wildflowers.ie or equal and approved seed with native provenance). This mix will comprise a selection of species which are tolerant of occasional flooding e.g. Marsh Marigold *Caltha palustris*, Purple Loosestrife *Lythrum salicaria*, Meadow Buttercup *Ranunculus acris*, Yellow Flag Iris *Iris pseudacorus*, Wild Angelica *Angelica sylvestris* and Ragged Robin *Silene flos-cuculi*. Other swale planting will include species such as Pendulous Sedge *Carex pendula*, Water Mint *Mentha aquatica* and Hart's Tongue fern *Asplenium scolopendrium*.

A range of ornamental shrubs are also proposed, again to tie-in with the existing Grange development to the south. It should be noted that a number of herbaceous species, which are beneficial for local pollinators, are also proposed in the planting schedule e.g. Lavender, *Verbena*, *Nepeta*, and *Geranium*.

A wildflower meadow of 2,431m² is proposed in the eastern section of the site. This meadow will be planted with a perennial meadow mix ("Purple Haze" by www.pictorialmeadows.co.uk or equal and approved native and ornamental mix designed for long flowering season from April to first heavy frost). This mix will comprise native species such as Oxeye Daisy *Leucanthemum vulgare*, Ragged Robin, Purple Loosestrife, Cow Parsley *Anthriscus sylvestris*, Harebell *Campanula rotundifolia* and Greater Knapweed *Centaurea scabiosa*.

For the full planting schedule please refer to the documentation prepared by Mitchell & Associates.

The proposed lighting design consists of the installation of 6m high luminaire columns along roadways on site e.g. the proposed developments access road, and 6m high luminaire columns along pedestrian walkways. Luminaires will be lit using cool white light (4000K) LEDs and are directional in nature e.g. all light emitted from luminaires is directed downwards towards the ground so that there is no risk of sky glow (lighting above the horizontal). Each individual lantern shall be capable of being switched on from dusk to dawn, unless otherwise requested by DLRCC. Lanterns will also have dimming capability of 75% full light output between midnight and 6am.

6.5 Potential Impact of the Proposed Development

As per the relevant guidelines, likely significant impacts have only been assessed for Key Ecological Receptors, as listed in Table 6.7. An impact is considered to be ecologically significant if it is predicted to affect the integrity or conservation status of a Key Ecological Receptor at a specified geographical scale. All impacts are described in the absence of mitigation.

Construction Phase Impact

Impacts on Designated Sites

A full assessment of the likelihood of significant impacts on European designated sites is contained in the Appropriate Assessment Screening Report (Scott Cawley, 2019), prepared as a separate document for this application. A summary of this assessment is given in the below paragraphs.

Ten SACs and six SPAs lie within the vicinity of the proposed development site. As no species or habitats for which these European sites are designated are known to occur within the proposed development site (i.e. there is no potential for habitat loss or direct impacts on protected species), impact pathways are limited to hydrological connections between the proposed development site and these European sites. No impacts on these European sites are predicted as a result of the proposed development for the reasons outlined below:

- Lack of any viable hydrological connection- Construction works associated with the proposed development could release sediment or harmful substances into the drainage network which could be carried downstream to European sites. There is no viable hydrological connection to four of the ten SACs (Glenasmole Valley SAC, Wicklow Mountains SAC, Ballyman Glen SAC and Knocksink Woods SAC) and therefore, impacts upon these sites can be excluded.

- Distance and potential for dilution in open marine waters- Of the remaining six SACs, a substantial open marine water buffer exists between two of them (Rockabill to Dalkey SAC and Howth Head SAC, which are located within the coastal waters of Dublin Bay) and the discharge point of the Brewery Stream (discharges to Dublin Bay near Blackrock). In the unlikely event that a construction related incident led to the discharge of sediment or harmful substances into the drainage network or Brewery Stream (which links the proposed development site with European sites contained in Dublin Bay including South Dublin Bay SAC and North Dublin Bay SAC) no significant impact on these sites would occur due to the distance between them and the potential for dilution in the drainage network and coastal waters of Dublin Bay. Furthermore, the distance between the discharge point of the Brewery Stream and Baldoyle Bay SAC and Bray Head SAC, renders impacts via a construction related incident unfeasible. A technical report prepared by AWN Consulting Ltd. (2019), which outlined the hydrological qualitative risks for the proposed development concluded that there would be no perceptible risks to downstream European sites for the following reasons:
    - If any silt-laden run-off from construction enters the surface water sewer and culverted section of Brewery Stream which runs under Brewery Road, the suspended solids will naturally settle within the drainage pipes by the time the stormwater reached any open watercourse (South Dublin Bay SAC and South Dublin Bay and River Tolka Estuary SPA lie >2.5km away). Settlement is considered to occur within a distance of <0.5km.
    - In the event of a 300 liter (worst case scenario) hydrocarbon leak fully discharging into the stormwater sewer during low flow conditions without mitigation, there is potential for some impact on surface water in the receiving Brewery Stream prior to dilution in the stream. This would be a short-term event. Due to dilution and attenuation the impact would not be measurable >1km from the site i.e. there would be no likely exceedance above statutory guidelines within Dublin Bay. Based on the possible loading of any hazardous material during construction and operation there is subsequently no potential for impact on Dublin Bay water quality status from an accidental discharge to stormwater on the Brewery Stream.
- Lack of suitable habitat for SPA bird species- In terms of the relevant SPA bird species, habitat loss and any disturbances at the proposed development site will not affect the conservation objectives of the SPAs. The subject lands are sufficiently removed from the SPAs such that there will be no habitat loss within any European sites and no risk of disturbance to any SPA bird species. Impacts as a result of surface water pollution, which could in turn negatively impact the habitats on which SPA bird species depend, can be excluded given the distance between the proposed development site and these SPAs and the potential for dilution in the surface water network and coastal waters. In conclusion, there will be no likely significant effects or adverse impacts to integrity of any European sites within the zone of influence of the proposed development site.

With regards nationally designated sites (e.g. pNHAs), five pNHAs lie in the vicinity of the proposed development site. The boundary South Dublin Bay pNHA overlaps with that of South Dublin Bay SAC. Likewise, the boundary of Booterstown Marsh pNHA overlaps with that of South Dublin Bay and River Tolka Estuary SPA. Therefore, potential impacts on these two pNHAs have already been addressed in the above paragraphs.

Dalkey Coastal Zone and Killiney Hill pNHA lies within the vicinity of the proposed development site and a hydrological connection exists between it and the proposed development site via the surface and foul water networks. Therefore, impacts to this pNHA can be excluded for the same reasons as outlined above.

Dingle Glen pNHA and Fitzsimon's Woods pNHA lie outside of the zone of influence of the proposed development due to the fact that there is no hydrological connection between these pNHAs and the proposed development site.

Impacts on Bats

All bat species in Ireland are protected under the Wildlife Acts 1976-2012 and are listed in Annex IV of the EU Habitats Directive 92/43/EEC (as amended). It is an offence under Section 23 of the Wildlife Acts 1976-2012 and under Section 51 of the European Communities (Birds and Natural Habitats) Regulations, 2011 to kill or to damage or destroy the breeding or resting place of any bat species. Under the Birds and Natural Habitats Regulations it is not necessary that the action should be deliberate for on offence to occur. This places an onus of due diligence on anyone proposing to carry out works that might result in such damage or destruction.

During the field survey on 6th February 2019, several mature trees within the survey area were identified as having potential to support roosting bats. The results of the desktop study revealed that a number of relatively commonly occurring bat species (Leisler's bat, Common Pipistrelle bat and Soprano Pipistrelle bat) are known to occur in the surrounding area. Bat activity surveys carried out in June and July 2019 revealed that Leisler's bats and Common pipistrelle bats use the site for foraging and commuting purposes. Given the protection offered to bats and their roosts, any trees identified as potential bat roosts (PBRs) (see Figure 6.4 for locations) will be subject to mitigation measures regarding their removal (see Section 6.9 - Mitigation Measures for Bats).

In addition, the cottages along the N11 were deemed to be of high suitability to support roosting bats. These cottages are retained within the current proposal and works to these dwellings relate solely to landscape proposals. No works are proposed to the structure or layout of these units. None of the buildings on site were identified as bat roosts over the course of these surveys conducted in June and July 2019. Nonetheless, bats may roost in dense ivy and therefore precautionary mitigation measures regarding vegetation removal from the cottages fronting onto the N11 has been provided in Section 6.9 - Mitigation Measures for Bats

Furthermore, the proposed development will require the removal of substantial amounts of vegetation, including treelines. Such linear landscape features may be important guides for commuting and foraging bats. The proposed removal of these linear landscape features has the potential to negatively impact on local commuting and foraging bats, through habitat fragmentation and loss of connectivity between roosting sites and foraging areas.

Finally, the proposed development will result in an increase in artificial lighting compared to baseline conditions over the course of the construction phase, to assist with night-time working and to ensure security for the construction site. Most bats are adversely affected by increases in illumination in their foraging areas and flight paths. Bats are known to be sensitive to lighting of both their roosts and their foraging habitats. Most Irish bat species avoid light sources when foraging (Bat Conservation Ireland, 2010). Light sources may attract insects from the surrounding areas and effectively reduce the available food resource to foraging bats locally. Overall impacts on local populations of bats are considered to be significant at the local level only.

Impacts on Breeding Birds

In the absence of adoption of protocols for the protection of birds and their nests, there is potential for direct impacts on nesting birds and/or mortality of birds arising from the clearance of vegetation, or removal of structures within the subject lands. This scenario would be most likely if works were to occur during the time of year when birds are likely to be nesting (1st March to 31st August, inclusive).

The subject lands were noted to contain a small number of common bird species which are found in a range of habitats in Ireland, including in urban and suburban areas. Birds were confirmed to be breeding on site during the dedicated breeding bird surveys conducted in June/July 2019. Therefore, in the absence of mitigation, the proposed development has the potential to cause direct (e.g. accidental mortality/ destruction of nests etc during construction) and indirect (e.g. disturbance impacts during construction) impacts on breeding birds.

Measures have been proposed for the protection of all birds and their nests, as it is an offence under the Wildlife Acts to injure or kill a wild bird or to disturb a wild bird on or near a nest containing eggs or unflown young (see Section 6.9 - Mitigation Measures for Breeding Birds).

Overall impacts on local populations of breeding birds are considered to be significant at the local level only.

Impacts on Habitats (Treelines)

Treeline habitat (WL2) has been identified as KERs on a precautionary basis, based on its potential value for local bat and bird populations. As previously discussed under sections 6.6.2 and 6.6.3 above, the removal of this habitat could result in a significant impact on a local level for foraging and commuting bats and a significant impact on a local level for nesting and foraging birds.

The proposed development will result in the removal of numerous treelines from the site. This will result in a permanent negative effect, significant at the local level.

There is also the possibility of accidental damage to mature trees which are to be retained as part of the proposed development. Such damage could occur as a result of machinery strikes or excavating close to the trees' roost system during construction, and from the stockpiling of soils in close proximity to trees/ treelines. Mitigation measures have been proposed to avoid damage to trees and treelines during construction (see Section 6.9 – Mitigation Measures for Habitats (Treelines)).

Overall impacts on treelines at the proposed development site are considered to be significant at the local level only.

Impacts on Habitats (Invasive Species)

The works involved in the construction of the proposed development have the potential to exacerbate the spread of Japanese Knotweed through soil disturbance and earthworks. Movement of soil could increase the spread of this invasive species, both within the site and further afield (if topsoil is removed from site). This could result in a negative impact significant at the local level.

In addition, if invasive species are included in the planting regime of any landscaping proposals for the site, this would result in an increase in the abundance of invasive species on site.

Mitigation measures have been proposed to avoid damage to invasive species during construction (see Section 6.9 – Mitigation Measures for Habitats (Invasive Species)).

Operational Phase Impacts

Impacts on Designated Sites

Sixteen European sites lie within the vicinity of the proposed development site. A number of these sites are connected with the proposed development site via the surface and foul water networks, which ultimately discharge into Dublin Bay.

The increase in foul waters (estimated to be 912.9 P.E.) generated during operation will ultimately discharge to Dublin Bay via Ringsend WWTP. Foul water, comprising sewage and industrial effluent (and some surface water run-off), from the Dublin area has historically been, and will continue to be, treated at Ringsend WWTP prior to discharge to Dublin Bay. The most recent information from Irish Water indicates that the plant is operating above its capacity of 1.64 million P.E. (Irish Water, 2017), with a current operational loading of c.2.2 million P.E. Despite the capacity issues associated with the Ringsend WWTP Dublin Bay is currently classified by the EPA as being of "Unpolluted" water quality status[20]. A technical report prepared by AWN Consulting (2019) concluded that there is no perceptible risk to water quality in Dublin Bay, as a result of addition foul loadings, due to the following:

- The fact that the development will be fully serviced with separate foul and surface water sewers which will have adequate capacity. Discharge will be licensed by Irish Water and the sewage will be transferred to Irish Water's Ringsend WWTP. This WWTP is required to be operated under an EPA licence and to meet environmental legislative requirements. Ringsend WWTP has received planning (2019) and will be upgraded with increased treatment capacity over the next 5 years. Even without treatment at Ringsend WWTP, the peak effluent discharge, calculated from the proposed development, would equate to 0.084% of the licensed discharge at Ringsend WWTP and would not impact on the current Water Body Status of the receiving waters (as defined

[20] Transitional and Coastal Surface Water Quality data (2010-2012) accessed from the EPA Envision Mapviewer www.gis.epa.ie/Envision (accessed May 2019)

within the Water Framework Directive) This assessment is supported by hydrodynamic and chemical modelling within Dublin Bay which has shown that there is a significant dilution for contaminants of concern (DIN and MRP) available quite close to the outfall for the treatment plants (WWTP 2012 EIS, WWTP 2018 EIAR). Recent water quality assessment of Dublin Bay also shows that Dublin Bay on the whole, currently has an 'Unpolluted' water quality status (EPA, 2019).

Impacts on Bats

The proposed development will result in an increase in artificial lighting compared to baseline conditions. There is therefore, a low risk of impacts on local bat populations as a result of light spill. Most bats are adversely affected by increases in illumination in their foraging areas and flight paths. Bats are known to be sensitive to lighting of both their roosts and their foraging habitats. It has been demonstrated in the UK that bats delay emergence from a roost where the roost entrance is illuminated (Downs et al., 2003). Most Irish bat species avoid light sources when foraging (Bat Conservation Ireland, 2010). Light sources may attract insects from the surrounding areas and effectively reduce the available food resource to foraging bats locally. This impact is likely to be particularly pronounced on species most sensitive to light including members of the genus *Myotis*. The proposed lighting across the development will illuminate previously unlit areas and could affect bats moving throughout the site or displace bats from the site entirely.

It should be noted that the proposed landscape design includes a number of proposals to enhance biodiversity on site. Approximately 100no. semi-mature beech, oak and rowan trees will be planted, in place of trees which must be removed as part of the development proposal. It is envisaged that these trees will grow to large sizes in maturity, thereby creating a green corridor through the development. This green corridor could be beneficial to both bats and birds in the future.

The lighting design for the proposed development has been reviewed by a qualified ecologist. The proposed luminaires will not result in any upward lighting such that bats should still be able to commute across the site above 6m. Considering the proposed development sites' location in the wider environment and the fact that much of the surrounding area is already artificially lit, no mitigation is required in relation to impacts on bats as a result of increased artificial lighting during operation as the impact is only regarded to be significant at the local level.

Impacts on Breeding Birds

No significant operational phase impacts are predicted on breeding birds as a result of the proposed development, as the site is already surrounded by residential areas.

Impacts on Habitats (Treelines)

No significant operational phase impacts are predicted on treeline habitats as a result of the proposed development.

Impacts on Habitats (Invasive Species)

No significant operational phase impacts are predicted with regard to invasive species as a result of the proposed development.

6.6 Potential Cumulative Impacts

According to the *Dún Laoghaire-Rathdown County Development Plan 2016-2022*, the proposed development site and its environs are currently zoned as "*R2- Existing residential*" with the following

planning objective; *"to protect and-or improve residential amenity"*. The surrounding lands are also largely residential in nature and comprise residential estates and neighbourhoods.

Existing or proposed projects or plans impacting on the same key ecological receptors have the potential to lead to impacts of a higher level of significance when assessed cumulatively. The most likely of these potential impacts is the potential for impacts in Dublin Bay via surface and foul water discharges. The potential for cumulative impacts in Dublin Bay are assessed in detail below.

Potential for Cumulative Impacts on European sites in Dublin Bay from surface waters

There is potential for potential cumulative impacts from proposed plans and projects within the *Dún Laoghaire-Rathdown County Development Plan 2016-2022, Fingal Development Plan 2017-2023, Dublin City Development Plan 2016-2022, South Dublin County Development Plan 2016-2022* and other county level land use plans which can influence conditions in Dublin Bay via rivers and other surface water features. However, Dublin Bay is of 'Good' water quality status and the pollutant content of future surface water discharges to Dublin Bay are considered likely to be decreased in the long-term. This is because it is an objective of the Greater Dublin Strategic Drainage Study, and all development plans within the catchment of Ringsend Wastewater Treatment Works to include Sustainable Urban Drainage Systems in new development. Together these objectives are considered likely to reduce pressures on designated marine and intertidal species and habitats in Dublin Bay.

Under the Dún Laoghaire-Rathdown County Development Plan (2016-2022), it is Council policy to *"implement the provisions of water pollution abatement measures in accordance with National and EU Directives and legislative requirements in conjunction with other agencies as appropriate".* Due to the restrictions imposed by this objective, the proposed development, both alone and in combination with other plans and projects, cannot have a detrimental effect on water quality in Dublin Bay.

There are a number of existing and proposed development projects, mainly minor residential alterations and developments, within the area[21] which have potential to produce potential cumulative impacts on water quality in Dublin Bay during their operation. However, the potential for cumulative pressures on surface waters is considered to be limited to short duration impacts resulting from construction activities (*c.* 30 months during the construction period) which could result in elevated levels of hydrocarbons or silts entering the surface water network. It is anticipated that the possibility of the proposed development having a significant impact on any European sites, either on its own or in combination with other developments in the vicinity of the site, can be excluded.

The assessment prepared by AWN Consulting Ltd. (2019) considered the potential for cumulative impacts in relation to surface e.g. the effect of cumulative events, such as release of sediment-laden water combined with a hydrocarbon leak on site. As there is adequate assimilation and dilution between the site and South Dublin Bay SAC and South Dublin Bay and River Tolka SPA, it is concluded that no perceptible impact on water quality would occur.

In-combination pressures on European sites in Dublin Bay from foul waters

Foul water, comprising sewage and industrial effluent (and some surface water run-off), from the Dublin area has historically been, and will continue to be, treated at Ringsend WWTP prior to discharge to Dublin Bay. The most recent information from Irish Water indicates that the plant is operating above its capacity of 1.64 million P.E. (Irish Water, 2017), with a current operational loading of c.2.2 million P.E. Ringsend WWTP operates under a discharge licence from the EPA (D0034-01) and must comply with the licence conditions.

The assessment prepared by AWN Consulting Ltd. (2019) concluded that the cumulative or in-combination effects of effluent arising from the proposed development with that of other developments discharging to Ringsend WWTP will not be significant having regard to the size of the calculated discharge from the proposal.

[21] https://dlrcocouncil.maps.arcgis.com/apps/webappviewer/index.html?id=2e098c7da88e4831877d7e06de49b912 Accessed 11th July 2019

The foul discharge arising from the proposed development would only equate to a small percentage of the overall licensed discharge at Ringsend WWTP and thus, would not impact on the overall water quality within Dublin Bay. Even without treatment at Ringsend WWTP, the peak effluent discharge, calculated from the proposed development, would equate to 0.084% of the licenced discharge at Ringsend WWTP and would not impact on the current Water Body Status of the receiving waters (as defined within the Water Framework Directive) This assessment is supported by hydrodynamic and chemical modelling within Dublin Bay which has shown that there is a significant dilution for contaminants of concern (DIN and MRP) available quite close to the outfall for the treatment plants (WWTP 2012 EIS, WWTP 2018 EIAR).

Considering the above, there is no possibility of the proposed development undermining the conservation objectives of any of the qualifying interests or special conservation interests of the European sites in, or associated with, Dublin Bay as a result of surface water run-off or foul effluent discharges.

Potential Cumulative Impacts on Commuting & Foraging Bats

Potential cumulative impacts on commuting and foraging bats are also considered. Further development in the area could result in further fragmentation of linear landscape features such as treelines and hedgerows and increases in artificial lighting, all of which would have a detrimental effect on local bat populations. Given the nature of the surrounding environment (consisting of existing residential dwellings and parks/ green areas) it is unlikely that there would be wide-scale vegetation clearance in the surrounding locality. In addition, the suburban nature of the surrounding environment means that artificial lighting is already widespread, and it is likely that any local bats using the area are habituated to some level of night-time lighting and that core foraging areas in the wider area consist of unlit green areas such as local parks and the Stillorgan Reservoir. Therefore, significant cumulative impacts are unlikely.

Existing Grange Development

Cumulative impacts with regards the existing Grange development include impacts on commuting and foraging bats as a result of increased artificial lighting. The proposed lighting design will introduce artificial lighting to a previously unlit part of the site. At the perimeters of the proposed development site the proposed lighting will act cumulatively with the existing lighting present in the wider Grange development to increase light levels in these areas. The proposed development will also result in additional modified/built habitats in the locality and an increase in surface and foul waters. It will also result in a reduction in the number of mature trees on site and suitable vegetation for breeding birds. However, the cumulative impacts are not anticipated to be greater than those of the proposed development in isolation and therefore impacts are not deemed to be significant beyond the local level.

Future Phase 2 Development

Evidently, the applicant does not control the entirety of remaining lands to provide consolidated development to the N11 frontage. This current application therefore relates to a Phase 1 development on lands that can deliver critically required residential units. OMP Architects have developed a phased Masterplan approach to provide an indicative future context for consideration by An Bord Pleanala, which is enclosed herewith. There has been a carefully considered design approach to development to ensure that the subject application can be delivered without compromising existing amenity or the future potential for development addressing the N11.

The Masterplan successfully integrates this new phase of development with the existing built fabric of The Grange. The approach has been to set the blocks around a central garden, which complements the existing scheme and delivers significant enhancements to the public realm.

Overall, it is estimated that there is potential for a further c. 250 units as part of a Phase 2 development.

The potential for future development of c. 250 residential units could result in further impacts on local bats and breeding birds, through the removal of existing buildings and installation of artificial lighting. Furthermore, the potential development of a further c. 250 residential units could also result in

impacts on designated sites, given the hydrological connection which exists between the subject lands and European sites contained within Dublin Bay, and the fact that foul waters treated at Ringsend WWTP ultimately discharge into the coastal waters of Dublin Bay. Finally, any future development of lands adjacent to the proposed development site could result in the spread of invasive species, if present.

6.7 Do Nothing Scenario

Under the likely "do-nothing scenario" the site would continue to be used and managed as it currently is; disturbed areas would continue to become colonised by opportunistic plant species, unoccupied buildings would go into disrepair and the infestation of Japanese Knotweed which is present in many areas of the site would continue to spread. The site would be expected to maintain the ecological status of the existing habitat types close to their current form.

6.8 Risks to Human Health

There are no risks posed to human health in terms of biodiversity.

6.9 Mitigation Measures

All of the mitigation measures described in this section are in accordance with current best practice guidance. Mitigation measures are proposed in relation to those receptors where the predicted impact significance can be further reduced by their implementation.

Construction Phase Mitigation Measures

Mitigation Measures to Prevent Water Pollution

The following measures are considered to be best practice with regards to construction and are considered appropriate in the context of general protection of biodiversity in local watercourses such as the Brewery Stream. They are not required for the protection of downstream designated sites.

Although the risk of any significant impact on water quality in any receiving waterbodies is considered to be extremely low, best practice will be implemented at all times in relation to all construction activities to avoid any accidental pollution events. This will include the following actions:

WM1: Hydrocarbons or any hazardous chemicals will be stored in specified bunded areas. Refuelling of plant machinery will also be carried out in bunded areas, to minimise the risk of any potential pollutants being discharges from the site.

WM2: Pollution control measures will be implemented to control any runoff from the site and prevent any runoff potentially contaminated with sediments or hazardous chemicals entering the drainage network.

WM3: Pouring of cement-based materials for works will only be carried out in dry conditions. Pumped concrete will be monitored to ensure there is no accidental discharge. Mixer washings and excess concrete will not be discharged directly into the existing drainage network. Concrete washout areas will be created to avoid any accidental discharge from the proposed development site.

WM4: Foul drainage from site offices and compounds, where not directed to the existing wastewater network, will be contained and disposed of off-site in an appropriate manner and in accordance with the relevant statutory regulations, to prevent any pollution to watercourses.

WM5: A response procedure will be put in place to deal with any accidental pollution events and spillage kits will be available and construction staff will be familiar with the emergency response procedure and use of the equipment.

Mitigation Measures for Bats

The following mitigation measures are proposed to ensure compliance with legislation within the Wildlife Acts 1976-2012, which protects bats and their roosts, during construction:

BM1: Prior to felling, trees which have been deemed suitable to support roosting bats (see PBRs on Figure 6.4) will be examined at height for the presence of bats and features which could support roosting bats. If bats are encountered, then they will be removed by hand by a suitably qualified bat ecologist under licence from NPWS and placed in a bat box for release at dusk. Trees containing potential roost features should be felled in a manner, such that features which could support roosting bats can remain intact and later be mounted onto other suitably sized trees along the perimeter to create a more natural environment for roosting bats.

BM2: Any trees to be felled on site should be rigged and felled in a way that is sensitive to the potential presence of bats. Trees should be section-felled, and the felled parts left in situ on the ground for a period of 24 hours. This should allow any bats present to escape or bats extracted by a licensed bat worker and placed in bat boxes to be erected on site. In addition, any trees which are to have works on their limbs carried out should be checked for the presence of bats by a suitably qualified bat ecologist prior to any works commencing.

BM3: If vegetation such as Ivy is to be removed from the cottages along the N11, the vegetation should be inspected by a suitably qualified bat ecologist with the aid of an endoscope, prior to removal, to check for the presence of roosting bats. If roosting bats are encountered, then works will cease and a derogation licence will need to be obtained from NPWS before vegetation removal can proceed.

BM4: During construction, any external lighting to be installed, including facilitating night-time working or security lighting, on the site should be sensitive to the presence of bats in the area. Lighting of the site during construction will be designed in accordance with the following guidance:

- *Guidance Notes for the Reduction of Obtrusive Light GN01* (Institute of Lighting Professionals, 2011)
- *Bats & Lighting - Guidance Notes for Planners, Engineers, Architects and Developers* (Bat Conservation Ireland, December 2010)
- *Bats and Lighting in the UK – Bats and the Built Environment Series* (Bat Conservation Trust UK, January 2008).
- No floodlighting of the buildings on site will be permitted during construction.

Mitigation Measures for Breeding Birds

The following mitigation measures are proposed to comply with legislation protecting birds and their nests:

BBM1: In order to avoid disturbance or harm to breeding birds, their nests, eggs and/or their unflown young, all works involving the removal of vegetation including, but not limited to, trees or hedgerows, will be undertaken outside of the nesting season (1st March to 31st August inclusive).

Or where this seasonal restriction cannot be observed then:

BBM2: A breeding bird survey will be undertaken during the appropriate survey season (between early March and late June) by an ecologist with experience undertaking breeding

bird surveys in order to assess whether birds are nesting within suitable habitat affected by or immediately adjacent to the subject lands. Should nesting birds be encountered during surveys, the removal of trees or hedgerows may be required to be delayed until after the nesting season (1st March to 31st August inclusive).

Mitigation Measures for Habitats (Treelines)

In order to minimise the risk of accidental damage to treelines and individual trees, during construction, the following measures will be implemented:

HM1: All treelines and individual trees marked for retention as identified in the landscaping proposals will be fenced off at the outset of works and for the duration of construction to avoid damage to the trunk, branches or root systems of the trees and structures.

HM2: Temporary fencing will be erected at a sufficient distance from the tree so as to enclose the Root Protection Area (RPA) of the tree (NRA, 2005-2011). In general, the RPA covers an area equivalent to a circle with a radius 12 times the stem diameter (measured at 1.5m above ground level for single stemmed trees).

HM3: Where fencing is not feasible due to insufficient space, protection for the tree/treeline will be afforded by wrapping hessian sacking (or suitable equivalent) around the trunk of the tree and strapping stout buffer timbers around it. It will still be necessary to ensure that the area within the RPA is not used for vehicle parking or the storage of materials (including oils and chemicals).

HM4: Weekly checks of the fences will take place by the Project Ecologist and/or Contractor.

HM5: Soil will not be placed within the Root Protection Area of trees or within 5m of any retained treelines.

Mitigation Measures for Habitats (Invasive Species)

It is imperative that appropriate eradication of Japanese Knotweed on site follows guidance from the NRA and Invasive Species Ireland (ISI). Invasive species which may be impacted by the works should not be spread further afield. Under Article 49 of the Birds and Natural Habitats Regulations (2011) it is illegal to "*plant, disperse, allow or cause to disperse, spread or otherwise cause to grow*" any plant listed in the Third Schedule. Any person who does so will be guilty of an offence.

The mitigation strategy in relation to Japanese Knotweed is based on current published best practice guidelines, with the objectives of permanently removing all invasive plant species from the working area and preventing the spread of any established populations present with the boundary of the proposed development (a legal requirement for Japanese knotweed) –

- *Guidelines on the Management of Noxious Weeds and Non-native Invasive Plant Species on National Roads* (National Roads Authority, 2010);
- *Managing Japanese Knotweed on Development Sites: The Knotweed Code of Practice* (Environment Agency, 2006);
- *Best Practice Management Guidelines, Japanese knotweed Fallopia japonica* (Kelly et al., 2008).

Removal of Japanese Knotweed plants will be required prior to any other element of site clearance. Mapping of new growth in late spring 2020 may be required as identification in winter months can be problematic.

An Invasive Species Management Plan, targeting the removal of Japanese Knotweed, has been prepared and this will need to be implemented sufficiently far in advance of the proposed construction works commencing, so as to allow time to adequately control all Japanese Knotweed populations within the boundary of the proposed development, having regard to the specific timing/seasonal constraints that apply. The Invasive Species Management Plan will assist the construction contractor in implementing the specific mitigation measures required in relation to Japanese Knotweed.

In general, there are three means by which invasive plant species may be eradicated from infested sites: long term herbicide treatment; excavation and disposal of contaminated material to licenced landfill; or, excavation and deep burial on site in combination with herbicide treatment (to a depth of at least 5m for Japanese knotweed). Disposal of invasive species should be carefully considered and appropriately conducted according to current guidance.

As species may have spread, or their distribution changed, between the habitat survey being carried out for this report and the commencement of construction works, the implementation of the Invasive Species Management Plan will include a pre-construction re-survey within the proposed development boundary to include accurate 1:5,000 scale mapping for the precise location of invasive species. The pre-construction surveys will be undertaken by suitable experts with competence in identifying Japanese Knotweed.

Please refer to the Invasive Species Management Plan (ISMP) which has been prepared by Scott Cawley Ltd. for detailed eradication methods for Japanese Knotweed on site.

In addition, proposed landscaping planting on site will avoid using non-native, invasive species listed on: http://invasivespeciesireland.com/background/legislation/ireland/third-schedule-part-1-plants/

as well as plants contained on the Amber List of the Risk Assessment species on the Invasive Species Ireland website, whose threat is yet unknown: http://invasivespeciesireland.com/toolkit/risk-assessment/amber-list-recorded-species/.

Operational Phase Mitigation Measures

Mitigation Measures for Bats

The following mitigation measures are proposed with regards the operation of the proposed development:

> **BM5:** The proposed development will include 5 no. Schwegler 1FF bat boxes to be erected on suitable retained trees in suitable locations across the site. The location and aspect of these bat boxes will be determined, in consultation with the project ecologist.

Mitigation Measures for Breeding Birds

The following mitigation measure is proposed to provide additional nesting opportunities to local populations of breeding birds, to compensate for the removal of substantial amounts of vegetation from the proposed development site:

> **BBM3:** 6 no. bird boxes, of different shapes, will be erected on retained trees, in suitable locations, to compensate for the removal of nesting habitat as part of the proposed development.

Mitigation Measures for Habitats (Invasive Species)

The proposed planting mixes have been reviewed by a competent ecologist to ensure that no species listed on the above references are included in the planting proposals. No mitigation measures are required for the operation of the proposed development.

6.10 Predicted Impacts of the Proposed Development

Post-construction, the proposed development will result in changes to the existing habitats on site. Habitats will be more modified in nature than those currently found on site. In addition, the removal of substantial amounts of vegetation will result in a reduction in the potential breeding habitats for

birds on site. Increased artificial lighting may impact local commuting and foraging bat species. Mitigation to avoid or reduce significant impacts on key ecological receptors has been provided for.

6.11 Monitoring

The following monitoring is proposed for the proposed development site, post construction:

- Monitoring of use of the prescribed bird boxes will take place in autumn, to check for nesting activity, for 3 years post-completion of the development, to determine if they need to be relocated within the site; and;
- Monitoring of use of proposed bat boxes will be undertaken annually for 5 years, by a suitably qualified and experienced bat ecologist, to check for roosting activity. Monitoring will take place twice a year- once in April/ May and once in September/ October. Results of the monitoring surveys will be provided to the competent authority.

6.12 Reinstatement

In the event that the full extent of the proposed development is not completed under this application, it is unlikely that any significant impacts on biodiversity would occur. Regarding invasive species this is not seen to be an issue as it is imperative that eradication of Japanese Knotweed from site is completed before any other works commence. In this way in the event that the project is discontinued for whatever reason there is no chance that invasive species could be spread further afield.

6.13 Interactions

The main interaction relating to this EIAR Chapter is with regards Water. Interactions exist between impacts on hydrology with respect to the potential impact of water pollution on protected areas in downstream designated sites. Nevertheless, the AA Screening has determined that likely significant effects on European sites can be excluded. In addition to the mitigation measures outlined in Section 6.9 above, Chapter 8 prescribes mitigation measures to ensure that surface water runoff is treated to the required standards.

6.14 Difficulties Encountered

Surveys for mammals were conducted during the optimal survey season, when vegetation height is reduced, and mammal signs are more clearly visible.

Flora surveys and surveys to record the presence of invasive species on site were conducted in the sub-optimal survey period (January – March). The optimum survey period for higher plants is considered to be between April and September, when plants are in flower and more easily identified. However, this limitation is not considered to result in any significant impact upon the survey results, given the disturbed nature of much of the site and the low likelihood of any rare/ protected species being present on site.

While most of the existing buildings on site were subject to internal and external inspections, to assess their potential to support roosting bats, the old cottages along the N11 were inaccessible due to health and safety reasons. Based on the high suitability of these buildings, as identified from the external inspection, this was considered to be a significant limitation. However, to overcome this limitation additional bat activity surveys were carried out in June/July 2019 to determine whether any roosting bats were present in these buildings. The number of activity surveys required was determined through consultation with best practice guidelines – (Collins, 2016). Given that activity surveys were subsequently carried out in compliance with best practice guidelines, the fact that the buildings were inaccessible is not considered to be a significant limitation.

Breeding birds were recorded within the breeding bird season (generally regarded as 1st March- 31st August inclusive) and therefore, no significant limitations with regards to breeding birds were encountered.

6.15 References

AWN Consulting Ltd. (2019). *Hydrological & Hydrogeological Qualitative Risk Assessment for Proposed Residential Development Site at Brewery Road, Stillorgan, Co. Dublin*

Bat Conservation Ireland, (2010) *Guidance notes for Planners, Engineers, Architects, and Developers*. Available online at www.batconservationireland.org/

Botanical Society for the British Isles (BSBI) (2007) *Checklist of the Flora of Britain & Ireland*. The Botanical Society of the British Isles.

CIEEM (2018) *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine*. Chartered Institute of Ecology and Environmental Management.

Colhoun, K. & Cummins, S. (2013) *Birds of Conservation Concern in Ireland 2014 -2019*. Irish Birds 9: 523-544.

Collins, J. (ed.) (2016) *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn).* The Bat Conservation Trust, London. ISBN-13 978-1-872745-96-1

Doogue, D., Nash, D., Parnell, J., Reynolds, S. & Wyse-Jackson, P. (1998) *Flora of County Dublin*. The Dublin Naturalists' Field Club.

Downs, Nick & Beaton, V & Guest, J & Polanski, J & Robinson, Sarah & Racey, Paul. (2003). *The effects of illuminating the roost entrance on the emergence behavior of Pipistrellus pygmaeus.* Biological Conservation - BIOL CONSERV. 111. 247-252. 10.1016/S0006-3207(02)00298-7.

Dún Laoghaire-Rathdown County Council (2016). *Dún Laoghaire-Rathdown County Development Plan 2016-2022.*

Environmental Protection Agency (2015). *Water Quality in Ireland. 2010-2012.* Available online at http://www.epa.ie/pubs/reports/water/waterqua/waterqualityinireland2010-2012.html#.Va41GflViko

Fossitt, J. (2000) *Guide to Habitats in Ireland*. The Heritage Council

Heritage Council (2011) *Best Practice Guidance for Habitat Survey and Mapping*.

Hundt, L. (2012). *Bat Surveys: Good Practice Guidelines, 2nd Edition,* Bat Conservation Trust, London ISBN-13: 9781872745985

Kelleher, C. & Marnell, F. (2006) *Bat Mitigation Guidelines for Ireland. Irish Wildlife Manuals, No. 25.* National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland.

National Roads Authority (2006). *Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes.* National Roads Authority (Now part of Transport Infrastructure Ireland), Dublin.

National Roads Authority (2009). *Guidelines for Assessment of Ecological Impacts of National Road Schemes*. National Roads Authority (Now part of Transport Infrastructure Ireland), Dublin.

Wyse Jackson, M., FitzPatrick, Ú., Cole, E., Jebb, M., McFerran, D., Sheehy Skeffington, M. & Wright, M. (2016) *Ireland Red List No. 10: Vascular Plants*. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs, Dublin, Ireland.

6.16 Appendix 6A - Relevant Legislation, Policy Documents & Guidance

National and International Legislation

- *Planning and Development (Amendment) Act 2010, as amended;*
- *Wildlife Acts 1976 and Wildlife (Amendment) Act (2000)* (as amended); hereafter collectively referred to as the Wildlife Acts;
- *European Communities (EC) (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011* (as amended); hereafter the Birds and Habitats Regulations;
- *EU Birds Directive 2009/147/EEC;*
- *EU Habitats Directive 92/43/EEC* (as amended);
- *Flora (Protection) Order, 2015*;

Relevant Policies and Plans

- *National Biodiversity Action Plan 2017 – 2021* (Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs, 2017);
- *Dún Laoghaire-Rathdown Development Plan 2016 – 2022* (Dún Laoghaire-Rathdown County Council, 2016);
- *Treasuring Our Wildlife: Dún Laoghaire-Rathdown Biodiversity Plan 2009-2013* (Dún Laoghaire-Rathdown County Council, 2009);
- *Draft River Basin Management Plan for Ireland 2018 – 2022* (Department of Housing, Planning, Community and Local Government, 2017); and;
- *Eastern River Basin District, River Basin Management Plan 2009-2015.*

Relevant Guidelines

The baseline ecological surveys, evaluation and impact assessment have taken account of the following legislation and guidelines, where relevant.

General Guidance

- *Guidelines for Ecological Impact Assessment in the United Kingdom* (CIEEM, 2016).
- *Guidelines for Assessment of Ecological Impacts of National Road Schemes* (NRA, 2009a);
- *Guidelines on the Information to be contained in Environmental Impact Statements* (EPA, 2002);
- *Advice Notes on Current Practice (in preparation of Environmental Impact Statements)* (EPA, 2003); and;
- *Environmental Planning and Construction Guidelines Series* (National Roads Authority, 2005 – 2011).

Habitats and Flora

- *Best Practice Guidance for Habitat Survey and Mapping* (Smith *et al*., 2011); and;
- *A Guide to Habitats in Ireland* (Fossitt, 2000).

Fauna

- *Bat Mitigation Guidelines for Ireland* (Kelleher. & Marnell, 2006);
- *Bat Surveys: Good Practice Guidelines* (Collins, 2016. Bat Conservation Trust); and;
- *Environmental Planning and Construction Guidelines Series* (National Roads Authority, 2005 – 2011).

6.17 Appendix 6B - Examples of Ecological Evaluation

Ecological Valuation Criteria

International Importance:
• 'European Site' including Special Area of Conservation (SAC), Site of Community Importance (SCI), Special Protection Area (SPA) or proposed Special Area of Conservation.
• Proposed Special Protection Area (pSPA).
• Site that fulfils the criteria for designation as a 'European Site' (see Annex III of the Habitats Directive, as amended).
• Features essential to maintaining the coherence of the Natura 2000 Network.[22]
• Site containing 'best examples' of the habitat types listed in Annex I of the Habitats Directive.
• Resident or regularly occurring populations (assessed to be important at the national level)[23] of the following:
  o Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; and / or
  o Species of animal and plants listed in Annex II and/or IV of the Habitats Directive.
• Ramsar Site (Convention on Wetlands of International Importance Especially Waterfowl Habitat 1971).
• World Heritage Site (Convention for the Protection of World Cultural & Natural Heritage, 1972).
• Biosphere Reserve (UNESCO Man & The Biosphere Programme).
• Site hosting significant species populations under the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals, 1979).
• Site hosting significant populations under the Berne Convention (Convention on the Conservation of European Wildlife and Natural Habitats, 1979).
• Biogenetic Reserve under the Council of Europe.
• European Diploma Site under the Council of Europe.
• Salmonid water designated pursuant to the European Communities (Quality of Salmonid Waters) Regulations, 1988, (S.I. No. 293 of 1988).[24]

[22] See Articles 3 and 10 of the Habitats Directive.
[23] It is suggested that, in general, 1% of the national population of such species qualifies as an internationally important population. However, a smaller population may qualify as internationally important where the population forms a critical part of a wider population or the species is at a critical phase of its life cycle.
[24] Note that such waters are designated based on these waters' capabilities of supporting salmon (*Salmo salar*), trout (*Salmo trutta*), char (*Salvelinus*) and whitefish (*Coregonus*).

Ecological Valuation Criteria

National Importance:
• Site designated or proposed as a Natural Heritage Area (NHA).
• Statutory Nature Reserve.
• Refuge for Fauna and Flora protected under the Wildlife Acts.
• National Park.
• Undesignated site fulfilling the criteria for designation as a Natural Heritage Area (NHA); Statutory Nature Reserve; Refuge for Fauna and Flora protected under the Wildlife Act; and/or a National Park.
• Resident or regularly occurring populations (assessed to be important at the national level)[25] of the following:
  o Species protected under the Wildlife Acts; and/or
  o Species listed on the relevant Red Data list.
• Site containing 'viable areas'[26] of the habitat types listed in Annex I of the Habitats Directive.

County Importance:
• Area of Special Amenity.[27]
• Area subject to a Tree Preservation Order.
• Area of High Amenity, or equivalent, designated under the County Development Plan.
• Resident or regularly occurring populations (assessed to be important at the County level)[28] of the following:
  o Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;
  o Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;
  o Species protected under the Wildlife Acts; and/or
  o Species listed on the relevant Red Data list.
• Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National importance.
• County important populations of species, or viable areas of semi-natural habitats or natural heritage features identified in the National or Local Biodiversity Action Plan (BAP) if this has been prepared.
• Sites containing semi-natural habitat types with high biodiversity in a county context and a high degree of naturalness, or populations of species that are uncommon within the county.
• Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level.

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;

[25] It is suggested that, in general, 1% of the national population of such species qualifies as a nationally important population. However, a smaller population may qualify as nationally important where the population forms a critical part of a wider population or the species is at a critical phase of its life cycle.

[26] A 'viable area' is defined as an area of a habitat that, given the particular characteristics of that habitat, was of a sufficient size and shape, such that its integrity (in terms of species composition, and ecological processes and function) would be maintained in the face of stochastic change (for example, as a result of climatic variation).

[27] It should be noted that whilst areas such as Areas of Special Amenity, areas subject to a Tree Preservation Order and Areas of High Amenity are often designated on the basis of their ecological value, they may also be designated for other reasons, such as their amenity or recreational value. Therefore, it should not be automatically assumed that such sites are of County importance from an ecological perspective.

[28] It is suggested that, in general, 1% of the County population of such species qualifies as a County important population. However, a smaller population may qualify as County importance where the population forms a critical part of a wider population or the species is at a critical phase of its life cycle.

Ecological Valuation Criteria

• Resident or regularly occurring populations (assessed to be important at the Local level)[29] of the following:
  o Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;
  o Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;
  o Species protected under the Wildlife Acts; and/or
  o 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.

[29] It is suggested that, in general, 1%of the local population of such species qualifies as a locally important population. However, a smaller population may qualify as locally important where the population forms a critical part of a wider population or the species is at a critical phase of its life cycle.