

ECOLOGICAL IMPACT ASSESSMENT (EcIA) OF PROPOSED DEVELOPMENT AT  
PALMYRA, WHITECHURCH ROAD, RATHFARNHAM, DUBLIN 16

JULY 2021



Prepared July 2021by:



Forest, Environmental Research and Services Ltd. ([www.fers.ie](http://www.fers.ie))

Silloogue

Kilberry

Navan

Co. Meath

087 7573121

[info@fers.ie](mailto:info@fers.ie), [pat.moran@fers.ie](mailto:pat.moran@fers.ie)

OSI License No.: EN0064509

## EXECUTIVE SUMMARY

*Beckett Developments Ltd are applying to South Dublin Co. Council for Planning Permission for the construction of 8 No. houses comprising of 1 No. 3 bedroom 2 storey detached, Type B1 (c.122 m<sup>2</sup>) Site 1, 1 No. 4 bedroom 2 storey detached type B2 (c.134 m<sup>2</sup>) Site 2, 6 No. 4 bedroom 2 storey semidetached Type A1 ( c.148 m<sup>2</sup>) Sites 3-8 inclusive, all associated on and off site development works ,landscaping ,boundary treatments, removal of existing street boundary screen wall and the provision of vehicular and pedestrian access to Grangebrook Avenue on infill site of circa 0.226 ha., part of the grounds of "Palmyra", Whitechurch Road (Grangebrook Avenue) Rathfarnham, Dublin 16.*

*The location of the proposed development is within 100m of a water course, the Whitechurch Stream, which is a tributary of the Dodder, which eventually discharges to Dublin Bay. In November of 2020, FERS Ltd was commissioned to undertake an Ecological Impact Assessment (EclA) of the proposed development in order to provide a baseline of the ecological resource present at the site and environs and to examine the potential impacts of the proposed development on the local ecological resource and to prescribe mitigation measures for any such potential impacts.*

*This EclA concludes that the site (a garden situated in an urban matrix) is of some importance to local breeding birds. Although there as evidence of significant numbers of fish within the Whitechurch stream, there was no evidence of Kingfisher or Otter observed. Despite the habitats present, a comprehensive bat survey of the site and environs yielded no evidence of roosting bats in the immediate vicinity or indeed a high level of usage of the habitats present. The primary potential impacts are a negative impact on the water quality of the Whitechurch stream and/or the spread of/importation of propagules of Alien Invasive Plant Species within/to site. The capacity of the Ringsend Waste Water Treatment Plant to cope with any additional PE loading must be decided by the Relevant Authority. Given the implementation of mitigation measures, it is considered that the proposed development will have no significant negative impact on the ecological resource present.*

# Contents

1	Introduction .....	1
1.1	FERS Company Background .....	1
1.2	Aims of this report .....	1
1.3	Description of proposed project .....	2
2	Survey Methodology.....	7
2.1	Desk Study.....	7
2.1.1	NPWS database.....	7
2.1.2	NBDC Database .....	7
2.1.3	Other relevant datasets .....	8
2.1.4	Existing ecological data from recent developments adjacent.....	8
2.2	Field surveys.....	9
2.2.1	Botanical/Habitat surveys.....	9
2.2.2	GIS .....	11
2.2.3	Bird Surveys.....	12
2.2.4	Non-volant Mammal survey .....	14
2.2.5	Bat survey.....	14
2.2.6	Otter Survey .....	17
3	Results.....	18
3.1	Desk Study.....	18
3.1.1	National Parks and Wildlife Service database.....	18
3.1.2	National Biodiversity Data Centre database .....	24
3.1.3	EIA Portal.....	25
3.1.4	EPA database.....	26
3.1.5	SDCC planning .....	26
3.2	Field Surveys .....	27
3.2.1	Botanical/Habitat surveys.....	27
3.2.2	Species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations of 2011 as amended .....	30
3.2.3	Breeding bird surveys.....	31
3.2.4	Kingfisher Surveys .....	33
3.3	Mammal Surveys.....	34
3.3.1	Non-volant mammal surveys .....	34
3.3.2	Otter Survey .....	36
3.3.3	Bat Survey .....	37
4	Summary of findings .....	41
4.1	Elements or particular areas of specific potential for biodiversity or conservation interest; ..	41

- 4.2 Elements with the potential to damage the ecological integrity of the study area, such as Alien Invasive Plant Species ..... 41
- 4.3 Presence and effectiveness of ecological corridors within the study area ..... 41
- 4.4 Conservation priorities regarding the identified biodiversity resource of the site ..... 42
- 4.5 Potential impacts and mitigation measures ..... 43
  - 4.5.1 Potential Impacts ..... 43
  - 4.5.2 Mitigation Measures ..... 43
- 5 Conclusions ..... 48
- 6 Appendix I – list of plant species observed..... 49
- 7 Appendix II – Habitat Map ..... 51
- 8 References and Bibliography ..... 52

# 1 Introduction

---

## 1.1 FERS Company Background

Forest, Environmental Research and Services have been conducting ecological surveys and research since the company's formation in 2005 by Dr Patrick Moran and Dr Kevin Black. Dr Moran, the principal ecologist with FERS, holds a 1st class honours degree in Environmental Biology (UCD), a Ph.D. in Ecology (UCD), a Diploma in EIA and SEA management (UCD) a Diploma in Environmental and Planning Law (King's Inn) and a M.Sc. in Geographical Information Systems and Remote Sensing (University of Ulster, Coleraine). Patrick has in excess of 20 years of experience in carrying out ecological surveys on both an academic and a professional basis. Dr Emma Reeves, senior ecologist with FERS holds a 1<sup>st</sup> class honours degree in Botany, and a Ph.D. in Botany. Emma has in excess of 10 years of experience in undertaking ecological surveys on an academic and professional basis. Ciarán Byrne, a senior ecologist with FERS holds a 1<sup>st</sup> class honours degree in Environmental Management (DIT) and a M.Sc. in Applied Science/Ecological Assessment (UCC). Ciarán has in excess of 5 years in undertaking ecological surveys on both an academic and a professional basis.

FERS client list includes National Parks and Wildlife Service, An Bord Pleanála, various County Councils, the Heritage Council, Teagasc, University College Dublin, the Environmental Protection Agency, Inland Waterways Association of Ireland, the Department of Agriculture, the Office of Public Works and Coillte in addition to numerous private individuals and companies.

## 1.2 Aims of this report

The primary aim of the ecological impact assessment (EclA) is to provide a complete baseline of ecological data for the study area concerned, allowing a comprehensive assessment of any potential impacts (including cumulative impacts) of the proposed development on the local ecological resource. This report does not comprise an EIA screening document. The primary aims of the Ecological Impact Assessment are:

- To survey habitats, flora, and fauna within the study area;
- To assess the potential presence, distribution and conservation status of ecological habitats and species of flora/fauna within the study area;

- To highlight elements or particular areas of specific potential for biodiversity or conservation interest;
- To highlight elements with the potential to damage the ecological integrity of the study area, such as Alien Invasive Plant Species;
- To identify the potential presence and effectiveness of ecological corridors within the study area;
- To assess and make recommendations on conservation priorities regarding the identified biodiversity resource of the site; and
- Where potential impacts are identified, detailed and comprehensive mitigation measures will be proposed, which will include avoidance of an element(s) if, and where deemed necessary.

### **1.3 Description of proposed project**

The site is located, within 15 km of two Natura 2000 sites. The approximate location of the proposed development site is illustrated in Figure 1, Figure 2, Figure 3 and Figure 4. An overlay of the approximate location of the site on satellite imagery is indicated in Figure 5. An excerpt from the Architect's drawing indicating the proposed layout is presented in Figure 6.



Figure 1: Approximate location of proposed development site (1:100,000)



Figure 2: Approximate location of proposed development site (1:50,000)



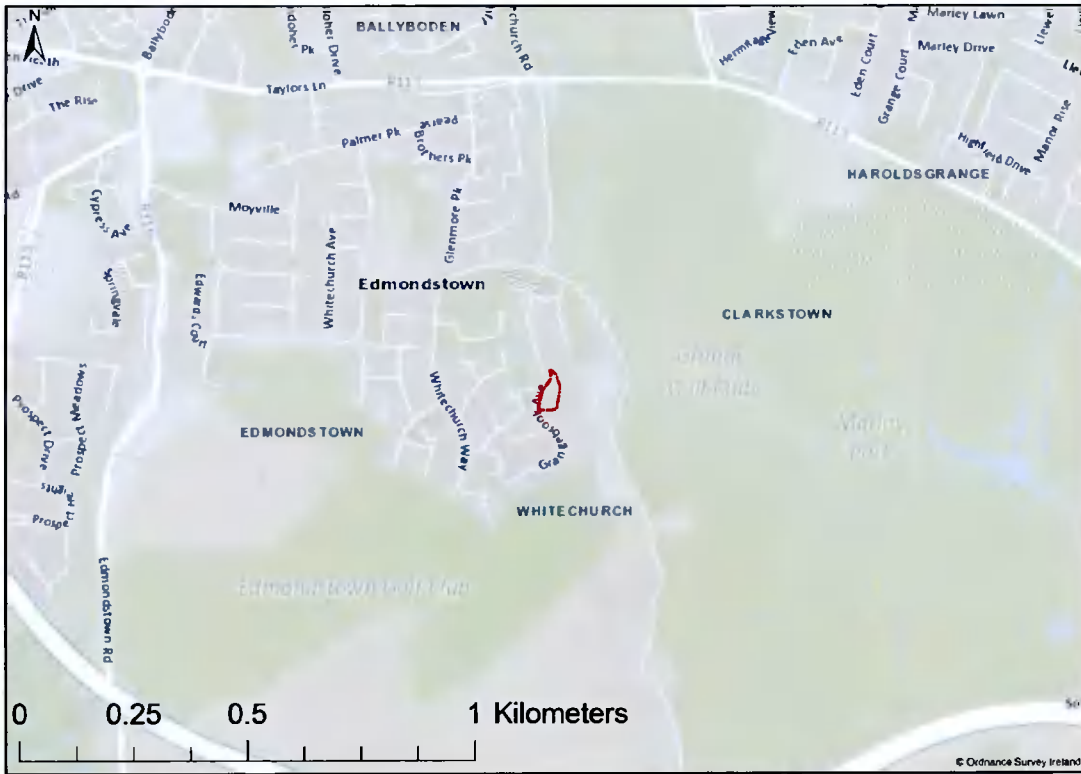


Figure 3: Approximate location of proposed development site (1:25,000)

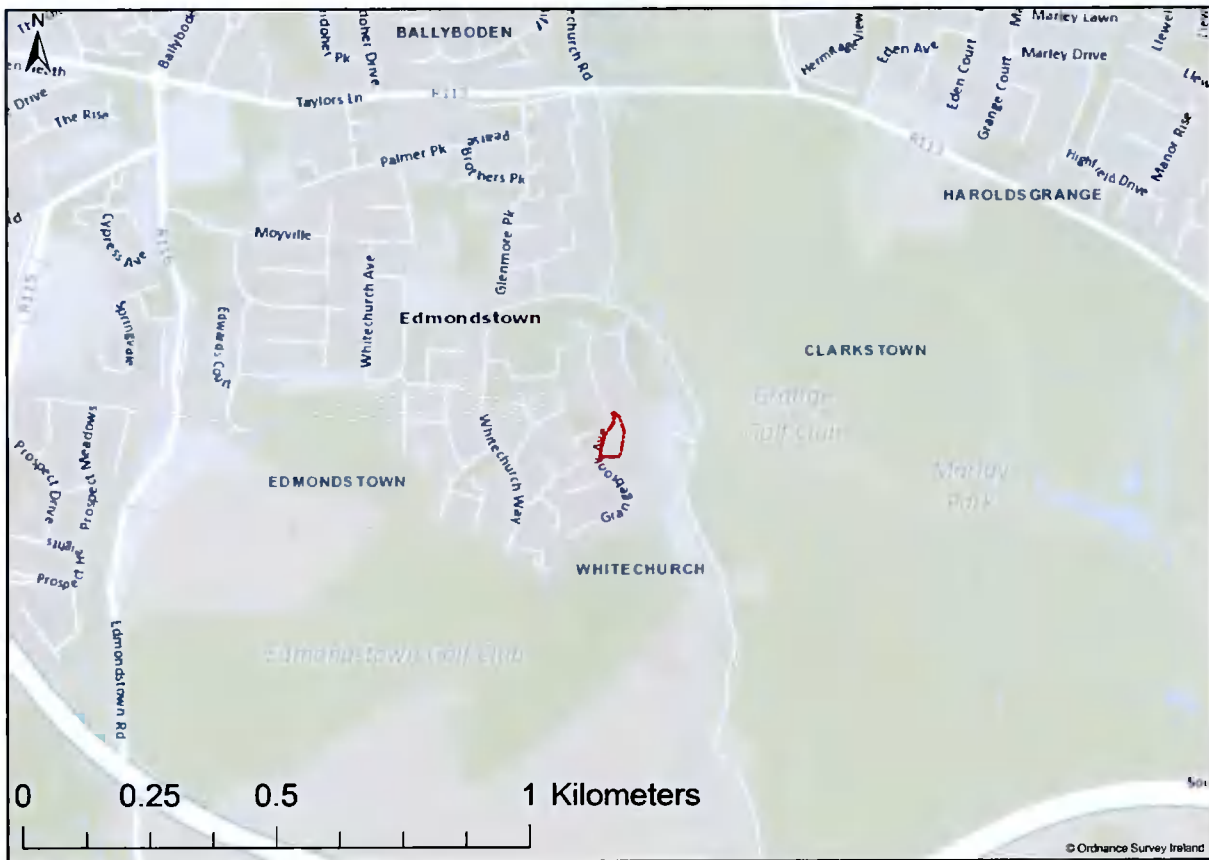


Figure 4: Approximate location of proposed development site (1:8,000)

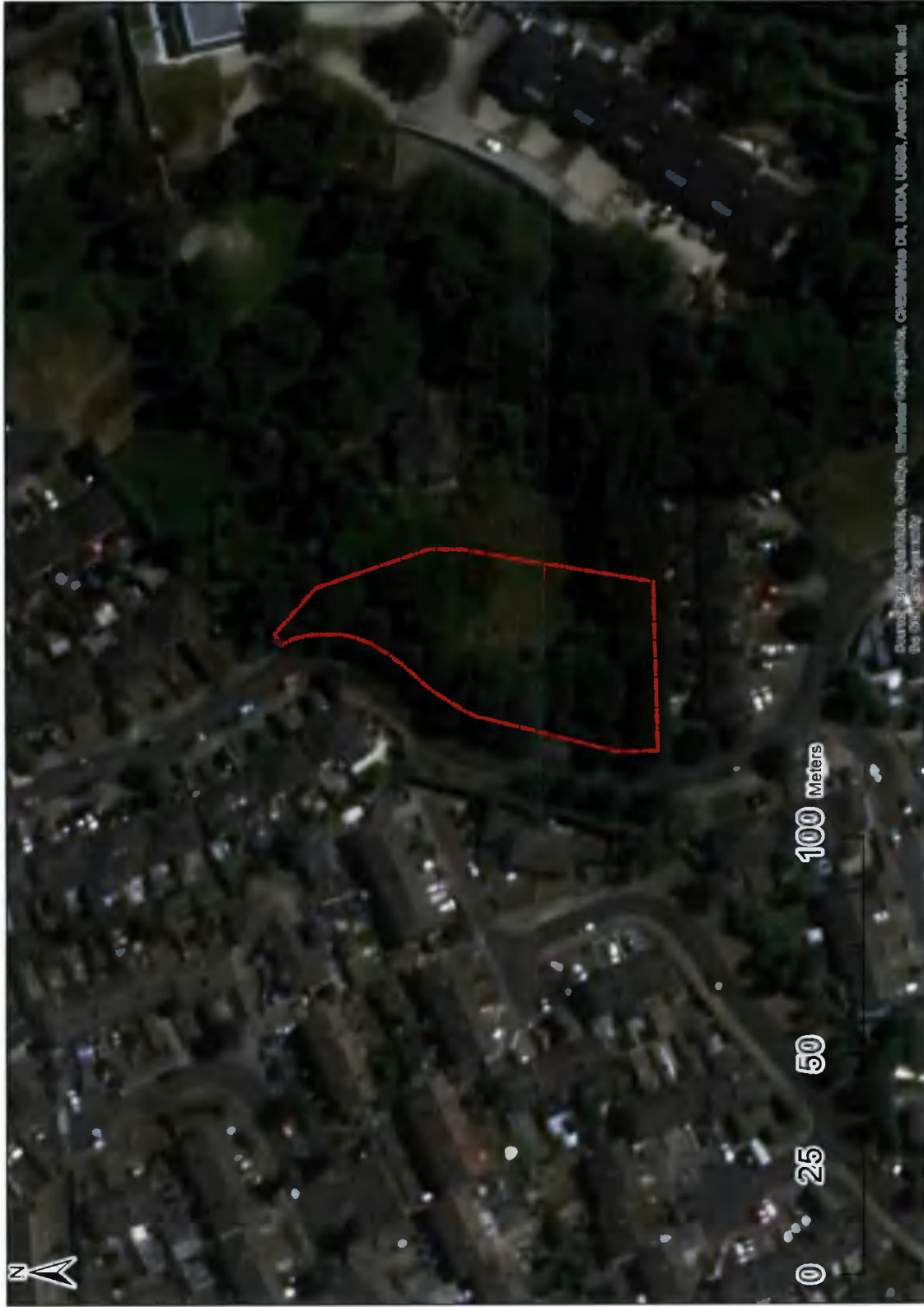


Figure 5: Overlay of approximate location of proposed site on satellite imagery (1:1,000)



Figure 6: Excerpt from Architect's drawing illustrating proposed layout

## 2 Survey Methodology

---

### 2.1 Desk Study

#### 2.1.1 NPWS database

The primary body consulted with regard to matters involving ecology within the Republic of Ireland is the National Parks and Wildlife Service (NPWS). The role of the NPWS is:

- To secure the conservation of a representative range of ecosystems and maintain and enhance populations of flora and fauna in Ireland;
- To implement the EU Habitats and Birds Directives;
- To designate and advise on the protection of Natural Heritage Areas (NHA) having particular regard to the need to consult with interested parties;
- To make the necessary arrangements for the implementation of National and EU legislation and policies and for the ratification and implementation of the range of international Conventions and Agreements relating to the natural heritage; and
- To manage, maintain and develop State-owned National Parks and Nature Reserves.

The desk study as pertaining to this survey involved querying the NPWS database for information pertaining to:

- European designated sites occurring within 15 km of the proposed development (Special Areas of Conservation (SAC) and Special Protection Areas (SPA)); and
- Domestic designated sites occurring within 5 km of the proposed development (Natural Heritage Areas (NHA) and Proposed Natural Heritage Areas (pNHA)).

#### 2.1.2 NBDC Database

In addition to consulting the NPWS database, the National Biodiversity Data Centre Database was consulted regarding species of conservation concern recorded as occurring within the vicinity of the study area within a user defined polygon.

### **2.1.3 Other relevant datasets**

Other relevant datasets were queried where appropriate

### **2.1.4 Existing ecological data from recent developments adjacent**

A search of the South Dublin County Council Planning online resource was undertaken in order to extract ecological data from previous planning applications adjacent to the proposed development site.

## 2.2 Field surveys

### 2.2.1 Botanical/Habitat surveys

Field surveys of vegetation occurring within the study area were undertaken on April 23<sup>rd</sup>, May 14<sup>th</sup>, May 28<sup>th</sup> and 15<sup>th</sup> June 2021 by Dr Patrick Moran and Dr Emma Reeves, within the optimal timeframe for such surveys. Nomenclature follows “Webb’s An Irish Flora” (2012 – 8<sup>th</sup> Edn) and “Mosses and Liverworts of Britain and Ireland a Field Guide” (2010) The survey consisted of walk-over survey recording all species of flora observed occurring within the study area. The botanical survey placed particular emphasis on rare, protected, or annexed habitats/species by reference to -

- a) Irish Plant Red Data Book;
- b) Habitats listed on Annex I of the EU Habitats Directive;
- c) Species listed on Annex II of the EU Habitats Directive; and
- d) Ecological steppingstones and ecological corridors (as covered under Article 10 of the EU Habitats Directive).

A written description of habitat within the receiving environment was recorded, to include the dominant species occurring. Photographs of representative areas of habitat are presented. An evaluation of the ecological significance of flora and habitats occurring within the site relative to surrounding habitats was also undertaken.

#### 2.2.1.1 Species of Invasive Alien Plants listed on Part (1) of the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations of 2011 as amended

The human introduction of alien plant species into ecosystems (intentionally or unintentionally) is historically a common-place occurrence. The vast majority of these alien plant species, when introduced into a foreign ecosystem for which they are not adapted, will die without specific care. In a small number of cases, however, these plants can come to dominate the ecosystem into which they have been introduced and become “Invasive”. There is presently a great deal of concern regarding the potential for invasive plant species to threaten the species composition, community structure and overall biodiversity of native Irish habitats. Invasive species can change the character and/or condition of an ecosystem over an extensive area through several mechanisms, depending on the species of plant and the nature of the habitat. Given the location of the proposed development site, proximate to the Whitechurch stream, specific cognisance was given to the potential presence of Alien Invasive Plant Species within the survey area. There are more than 30 species on the Third Schedule of the

European Communities (Birds and Natural Habitats) Regulations of 2011 as amended. Riparian systems are particularly vulnerable to plant invasions owing largely to the naturally high disturbance frequencies within riparian habitats and the rapidity with which an invasive can spread utilising the medium of flowing water. In addition, there has been an historic tendency for people to plant “ornamental” species beside water. As a result, the vast majority of the species listed on the Third Schedule are associated broadly with riparian systems, occurring within the water course, or proliferating along the bank (see Table 1).

Table 1: List of plant species appearing on the Third Schedule

Common Name	Latin Name	Associated with freshwater habitats
American skunk-cabbage	<i>Lysichiton americanus</i>	Yes
Red alga	<i>Grateloupia doryphora</i>	No
Brazilian giant-rhubarb	<i>Gunnera manicata</i>	Yes
Broad-leaved rush	<i>Juncus planifolius</i>	Yes
Cape pondweed	<i>Aponogeton distachyos</i>	Yes
Cord-grasses	<i>Spartina (all species hybrids)</i>	No
Curly waterweed	<i>Lagarosiphon major</i>	Yes
Dwarf eel-grass	<i>Zostera japonica</i>	No
Fanwort	<i>Cabomba caroliniana</i>	Yes
Floating pennywort	<i>Hydrocotyle ranunculoides</i>	Yes
Fringed water-lily	<i>Nymphoides peltata</i>	Yes
Giant hogweed	<i>Heracleum mantegazzianum</i>	Yes
Giant knotweed	<i>Fallopia sachalinensis</i>	Yes
Giant-rhubarb	<i>Gunnera tinctoria</i>	Yes
Giant salvinia	<i>Salvinia molesta</i>	Yes
Himalayan balsam	<i>Impatiens glandulifera</i>	Yes
Himalayan knotweed	<i>Persicaria wallichii</i>	Yes
Hottentot-fig	<i>Carpobrotus edulis</i>	No
Japanese knotweed	<i>Fallopia japonica</i>	Yes
Large-flowered waterweed	<i>Egeria densa</i>	Yes
Mile-a-minute weed	<i>Persicaria perfoliata</i>	Yes
New Zealand pigmyweed	<i>Crassula helmsii</i>	Yes
Parrot's feather	<i>Myriophyllum aquaticum</i>	Yes
Rhododendron	<i>Rhododendron ponticum</i>	No
Salmonberry	<i>Rubus spectabilis</i>	Yes
Sea-buckthorn	<i>Hippophae rhamnoides</i>	No
Spanish bluebell	<i>Hyacinthoides hispanica</i>	No
Three-cornered leek	<i>Allium triquetrum</i>	No
Wakame	<i>Undaria pinnatifida</i>	No
Water chestnut	<i>Trapa natans</i>	Yes
Water fern	<i>Azolla filiculoides</i>	Yes
Water lettuce	<i>Pistia stratiotes</i>	Yes
Water-primrose	<i>Ludwigia (all species)</i>	Yes
Waterweeds	<i>Elodea (excluding canadensis)</i>	Yes
Wireweed	<i>Sargassum muticum</i>	Marine/transition

Of the species listed in Part (1) of the Third Schedule, three species were thought to be of particular concern owing to the location of the survey area and the potential for spread through any disturbance:

- Japanese Knotweed (*Fallopia Japonica*);
- Himalayan Balsam (*Impatiens glandulifera*); and
- Giant Hogweed (*Heracleum mantegazzianum*).

The survey for Alien Invasive Species listed in Part (1) of the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations of 2011 was undertaken in tandem with the habitats/vegetation surveys.

### 2.2.2 GIS

All GIS components of the project were undertaken using ArcGIS 10.8 and standard methodologies.



### 2.2.3 Bird Surveys

#### 2.2.3.1 Breeding Bird Survey

Bird Watch Ireland and the RSPB NI have agreed a list of priority bird species for conservation action on the island of Ireland. These Birds of Conservation Concern in Ireland are published in a list known as the BoCCI List (current list covers the period 2020 – 2026). In this BoCCI List, birds are classified into three separate lists (Red, Amber and Green), based on the conservation status of the bird and hence conservation priority. Red List birds and Amber List birds are of conservation concern and the Green List birds are not considered threatened.

The first breeding bird survey was undertaken by Dr Emma Reeves on the morning of the 16<sup>th</sup> of April under optimal conditions (15°C and sunny). A second breeding bird survey was undertaken by Dr Patrick Moran on the morning of the 10<sup>th</sup> of May 2021 under optimal conditions (16°C and sunny). During the surveys, McKinnon lists (7 lists, 10 species per list) were compiled in order to determine not only the diversity of species present, but also a proxy of abundance. All bird species observed or heard in the vicinity of the survey site were recorded. Any birds demonstrating territorial behaviour were considered to be breeding at, or in the vicinity of, the survey site.

The purpose of the bird surveys was:

- To record any priority species (Annex I, Red or Amber listed) and assess their breeding status within the site;
- To identify any areas of habitat of particular interest with regard to avian biodiversity.

#### 2.2.3.2 Kingfisher Survey

The importance of the biodiversity of Ireland's waterways is reflected in the designation of many of our waterways under the Birds and Habitats Directives. A number of species of European significance occur on our waterways including the Kingfisher (*Alcedo atthis*), which is listed on Annex I of the EU Birds Directive. In 2010 (Cummins *et al*), six major river systems - the Rivers Barrow, Blackwater (Munster), Boyne, Clare, Moy and Nore (in addition to two smaller systems, the Rivers Gill and Illen) – were surveyed in order to assess the distribution and abundance of Kingfisher in representative habitats throughout Ireland. Kingfisher were recorded on all river systems surveyed. The Whitechurch stream is within 100 m of the proposed development site and on initial inspection, it was considered that Kingfisher may forage along the watercourse, although there was no habitat suitable for nesting. As such, Kingfisher surveys were undertaken at the site on the 19<sup>th</sup> of April and the 10<sup>th</sup> of May 2021 by Dr Patrick Moran under optimal conditions (clear visibility, no rain, no wind), using a modified

version of the methodology as presented in “Assessment of the distribution and abundance of Kingfisher *Alcedo atthis* and other riparian birds on six SAC river systems in Ireland” (Cummins *et al*, 2010) – which was prepared by Birdwatch Ireland for the NPWS.

In addition, having placed a “Perching Post” in a suitable location within the Whitechurch Stream, a trail camera (Bushnell Core DS No Glow) was deployed in order to record any activity along the stream and in particular any birds utilising the perching post during the period 19<sup>th</sup> April – 10<sup>th</sup> May 2021.



Figure 7: Photograph illustrating location of trail camera and perching post (circled in red)

The primary goal of Kingfisher surveys was:

- (1) To identify if there are areas suitable for nesting Kingfisher within the site; and
- (2) To note any indications (including calls) of foraging Kingfisher immediately adjacent.

### 2.2.4 Non-volant Mammal survey

Non-volant mammal surveys were undertaken at the site by Dr Emma Reeves on the 16<sup>th</sup> of April and by Dr Patrick on the 19<sup>th</sup> of April, 10<sup>th</sup> of May and the 30<sup>th</sup> of June/1<sup>st</sup> of July 2021. A survey of the area of the proposed development and *environs* was undertaken through direct observations (seeing the animal), observation of faeces, prey remains, shelters, hair, etc. Three trail cameras (Bushnell Core DS No Glow) including the trail camera along the Whitechurch Stream were deployed during the period April 19<sup>th</sup> – May 10<sup>th</sup>, 2021, in order to assess mammal use of the habitats present.



Figure 8: Aerial imagery indicating location of trail camera deployed for Kingfisher/Otter monitoring (red) and general mammals (yellow)

### 2.2.5 Bat survey

A query of the National Biodiversity Datacentre database for Habitat suitability indices as regards bat landscapes (accessed 03/05/21) indicated that the survey area is located in an “intermediate” landscape as regards “All Bats”. In addition, there has been a building at the Palmyra site for over 100 years as the main building is shown on the 1<sup>st</sup> edition OSI maps, and the current layout is much the same as that illustrated on the 2<sup>nd</sup> Edition OSI map. The desk study indicated potential for a hibernation and/or maternity roost to be present within the main dwelling house immediately

adjacent to the proposed development site. The trees within the development site are suboptimal for roosting bats, and the main dwelling house was deemed to be the most likely roosting site in the immediate vicinity. Surveys for usage of the proposed site and immediate *environs* were undertaken during both the winter (hibernation) and summer (maternity) seasons.

---

#### 2.2.5.1 Winter survey

A daylight survey to assess the suitability of habitats occurring for use by roosting bats was undertaken on the 11<sup>th</sup> of January 2021 by Dr Emma Reeves. Having identified that the main dwelling was the most suitable winter roosting site, one Pettersson D500X unit was deployed in the vicinity of the building, with the other two units deployed within the *environs*. These units remained *in situ* recording any bat activity between the 11<sup>th</sup> of January and the 15<sup>th</sup> of February 2021. Having retrieved the units, the data was downloaded and analysed utilising software and manual interpretation (SonoChiro and Batsound).

---

#### 2.2.5.2 Summer surveys

Owing to the habitats present and the ecological corridor provided by the Whitechurch Stream adjacent, it was deemed necessary to undertake both static monitoring of the site (three Pettersson D500x Units) and an emergence/dawn survey of the site.

---

##### 2.2.5.2.1 Static Monitoring

During the period 8<sup>th</sup> of June – 15<sup>th</sup> of June 2021, three Pettersson D500x Units were deployed:

- Unit (1) was deployed in the small “walled garden area”;
- Unit (2) was deployed in the main garden; and
- Unit (3) was deployed adjacent to the main dwelling.

Having retrieved the units, the data was downloaded and analysed utilising software and manual interpretation (SonoChiro and Batsound).

---

##### 2.2.5.2.2 Emergence and Dawn Survey

On the night of the 30<sup>th</sup> of June and morning of 1<sup>st</sup> of July 2021, an emergence and dawn survey was undertaken by Dr Patrick Moran under ideal conditions (starting temperature 18°C, no wind, no rain). Prior to the survey beginning, the main structures were examined utilising a drone (Mavic 2 Zoom) in order to identify any priority areas to focus surveys on (areas around roof with staining, etc.).

The emergence survey commenced at 21:30 (sunset at 22:00) and finished at 23:30. Conditions were optimal throughout the survey. The area surveyed is relatively small and the primary focus was the dwelling house. A Pulsar Helion XP 50 Thermal Camera was utilised throughout the survey.



Figure 9: Thermal image of main dwelling house



Figure 10: Thermal image of path through the garden

The dawn survey commenced at 03:45, approximately 70 minutes before sunrise and finished at 05:25, approximately 20 minutes after sunrise. Conditions were optimal throughout, with a temperature of 11°C and no wind or rain.

In addition to the standard emergence/dawn survey, a Pettersson D500x unit was deployed with the microphone facing the water surface of the Whitechurch Stream, approximately 1.5m from the water

surface. This unit recorded all bat activity from 30 minutes pre sunset (June 30<sup>th</sup> 2021) until 20 minutes post sunrise (July 1<sup>st</sup> 2021) along the river corridor.

### 2.2.6 Otter Survey

Otter (*Lutra lutra*) is a primarily piscivorous species, depending largely on salmonids but also consuming frogs, crayfish, etc. A survey of the habitat occurring along the Whitechurch Stream in the vicinity of the proposed development site indicated that it is largely unsuitable for Otter holts. It was, however, deemed that given the nature of the watercourse (with abundant fish noted) and the fact that Otter is recorded within the 2km square in which the proposed development is located (NBDC) that it is suitable for foraging Otter. A survey for spraint, etc. was undertaken (based on the methodology outlined in Reid *et al.* 2013) on the 19<sup>th</sup> of April and the 10<sup>th</sup> of May 2021. In addition, In, a trail camera (Bushnell Core DS No Glow) was deployed in order to record any activity along the stream during the period 19<sup>th</sup> April – 10<sup>th</sup> May 2021.

## 3 Results

---

### 3.1 Desk Study

#### 3.1.1 National Parks and Wildlife Service database

This section of the desk study primarily involved the consultation of the NPWS database, which is publicly accessible. A GIS-based analysis of sites designated for conservation interests (Special Area of Conservation (SAC), Special Protection Area (SPA), Natural Heritage Area (NHA) and Proposed Natural Heritage Area (pNHA)) occurring within 15 km of the survey area (SAC/SPA) or 5 km (pNHA/NHA) was undertaken.

- There are no NHAs occurring within 5 km of the survey area.
- There are two pNHAs within 5 km of the survey area (Dodder Valley pNHA and Fitzsimon's Wood pNHA).
- There is one SPA within 5 km of the survey area (Wicklow Mountains SPA);
- There is one SAC within 5 km of the survey area (Wicklow Mountains SAC);
- There are seven SACs within 15 km (Glenasmole Valley SAC, Wicklow Mountains SAC, Knocksink Wood SAC, Ballyman Glen SAC, Rockabill to Dalkey Island SAC, North Dublin Bay SAC and South Dublin Bay SAC) of the survey area; and
- There are four SPAs within 15 km (North Bull Island SPA, South Dublin Bay and River Tolka Estuary SPA, Wicklow Mountains SPA and Dalkey Islands SPA) of the proposed development.

Maps indicating the location of the proposed development relevant to designated sites are illustrated in Figure 11, Figure 12, Figure 13, Figure 14 and Figure 15.

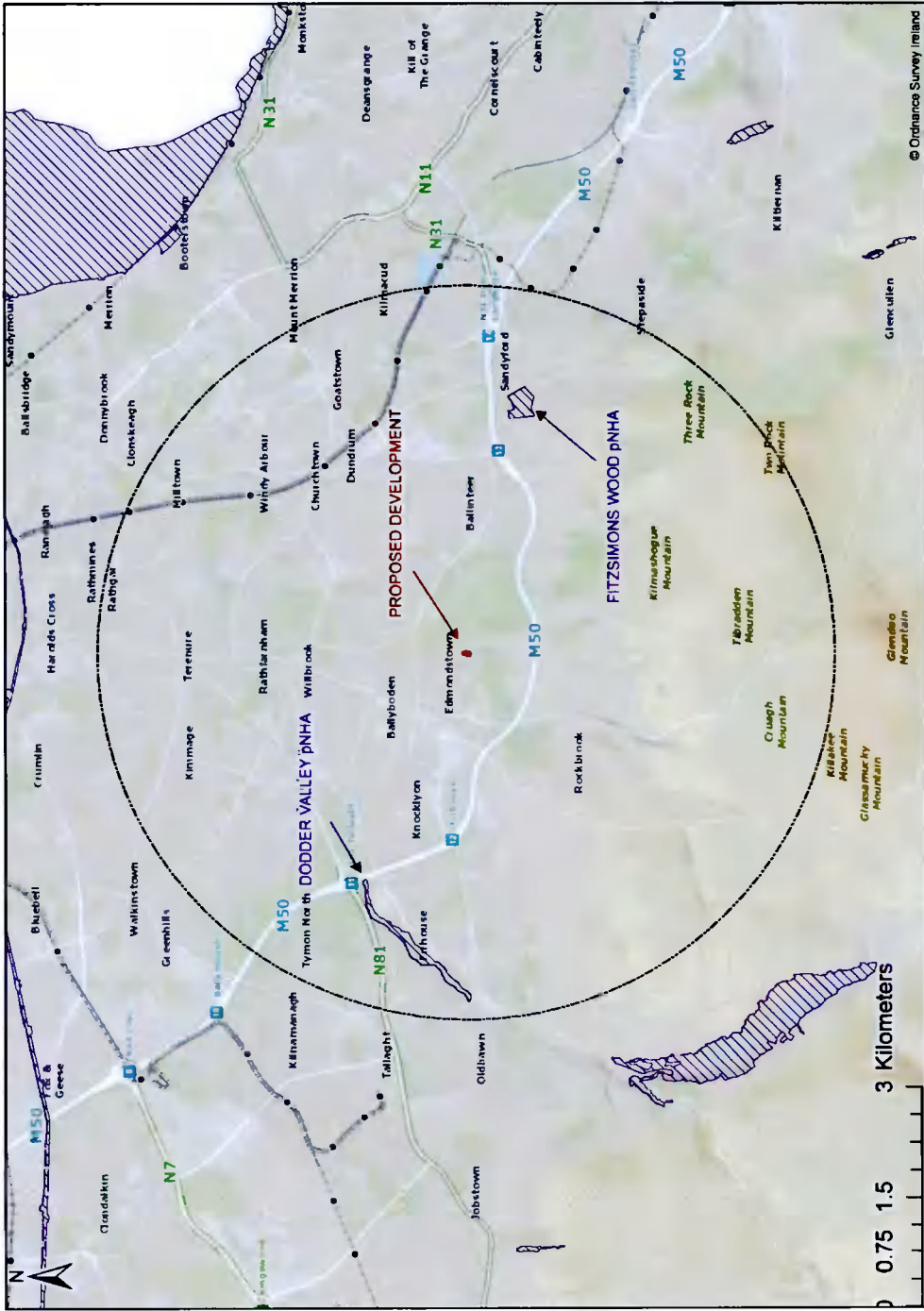


Figure 11: Map indicating location of pNHAs within 5 km of proposed development



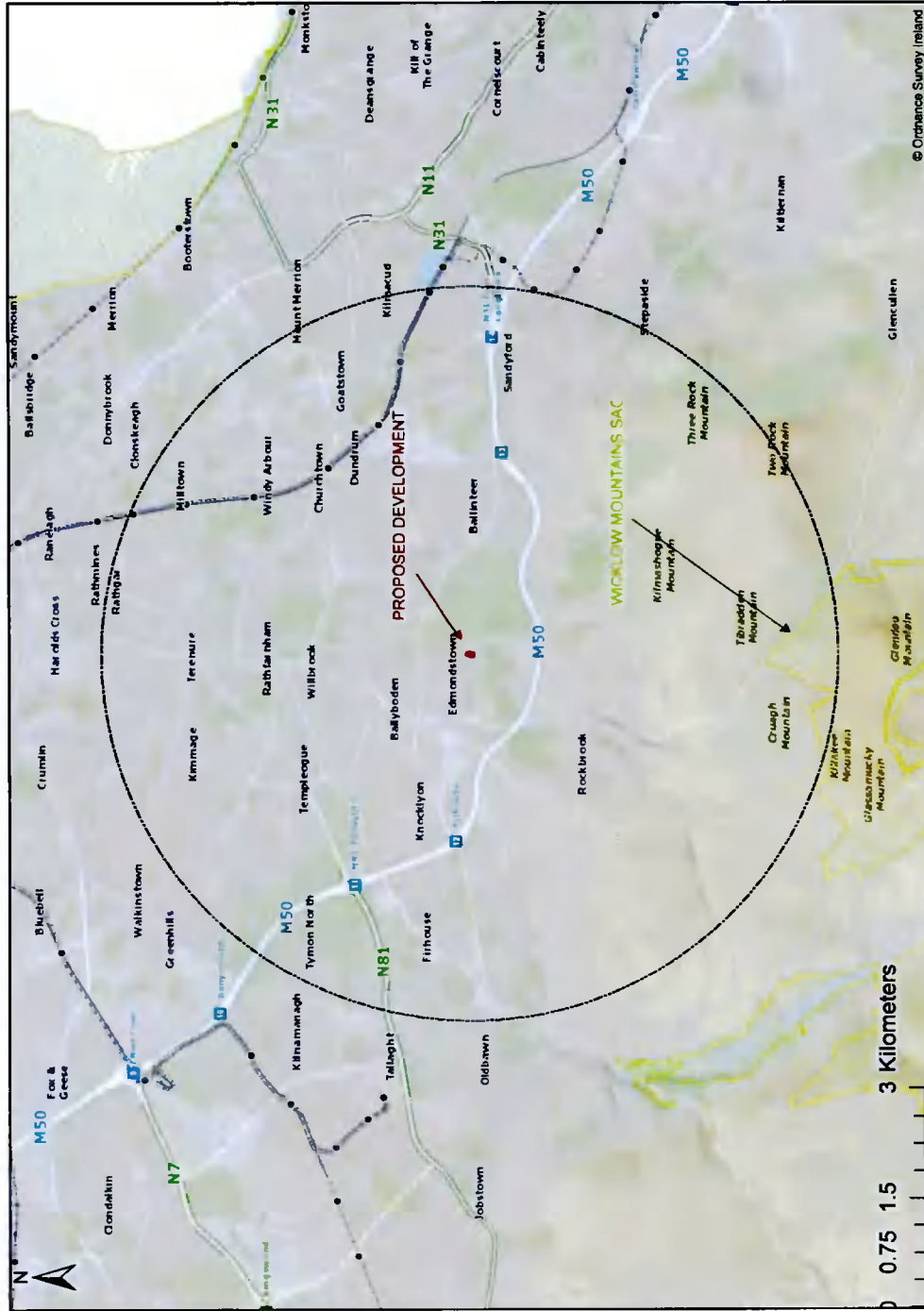


Figure 12: Map indicating location of SACs within 5 km of proposed development

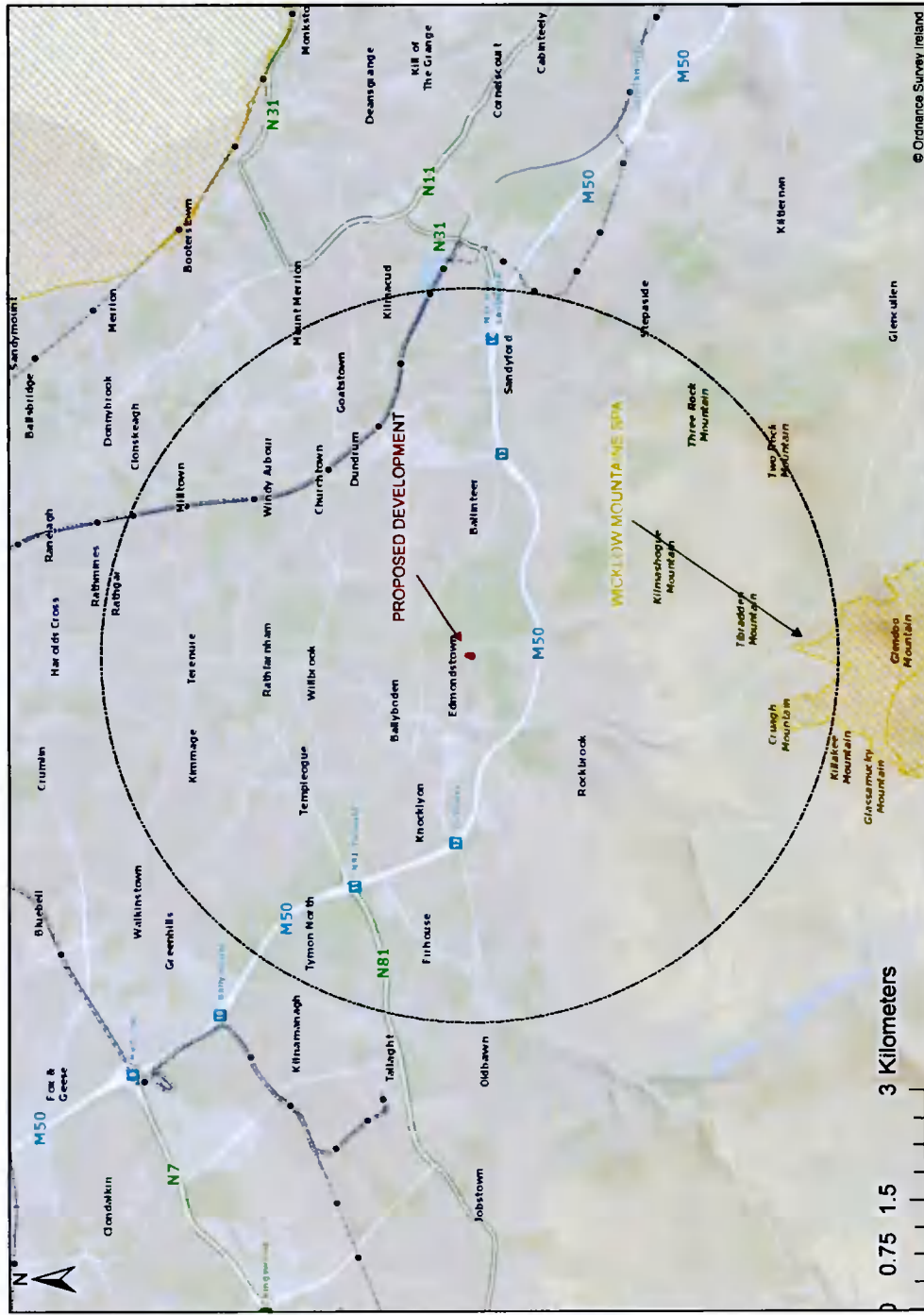


Figure 13: Map indicating location of SPAs within 5 km of proposed development



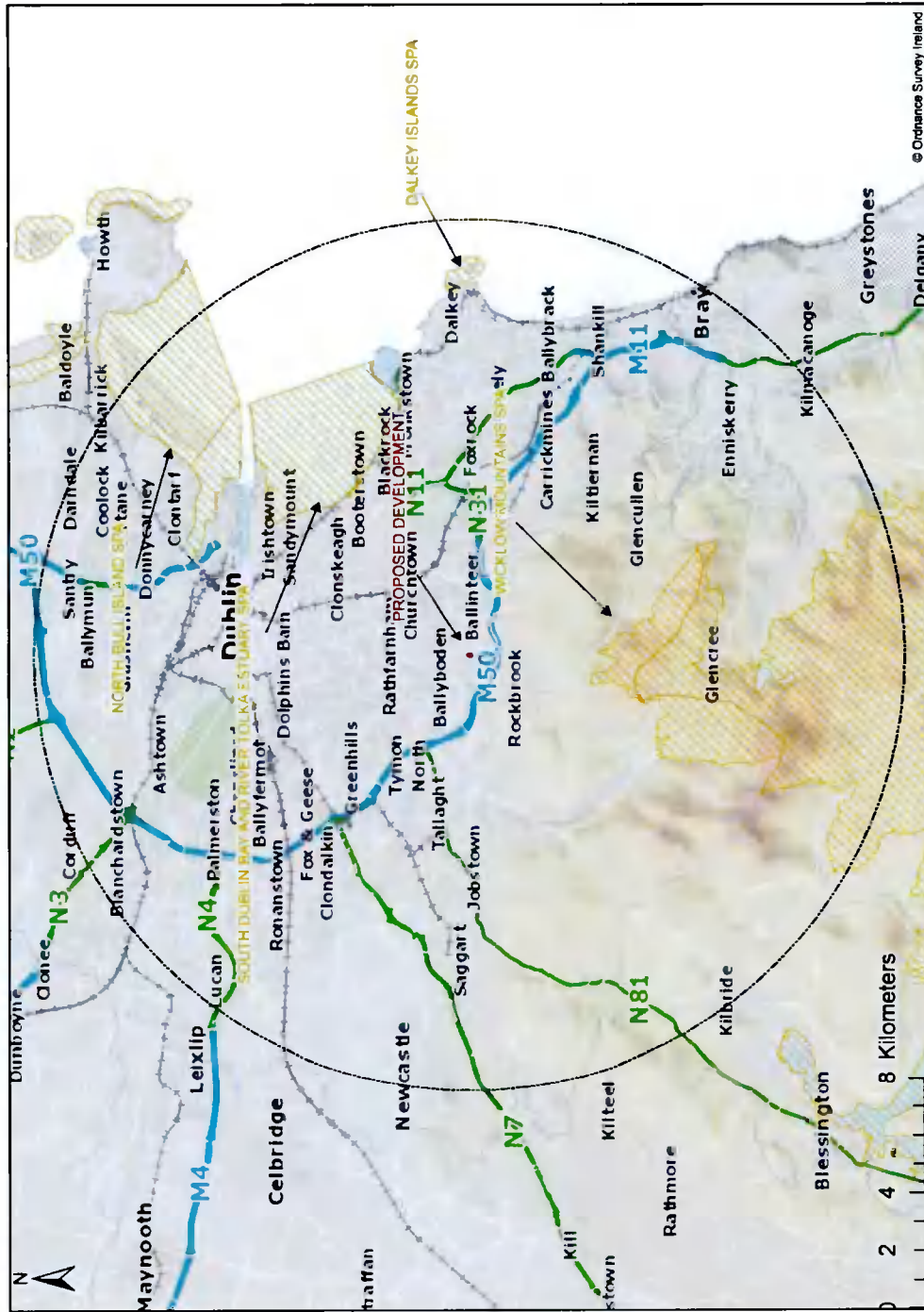


Figure 15: Map indicating location of SPAs within 15 km of proposed development

### 3.1.2 National Biodiversity Data Centre database

The NBDC database was accessed on 28/06/21 to query records occurring within the vicinity (2 km square O12N) in which the proposed development is located (see Figure 16). The species of conservation concern as recorded within this polygon are illustrated in Table 2. There are numerous other species of conservation concern known to occur in the vicinity.

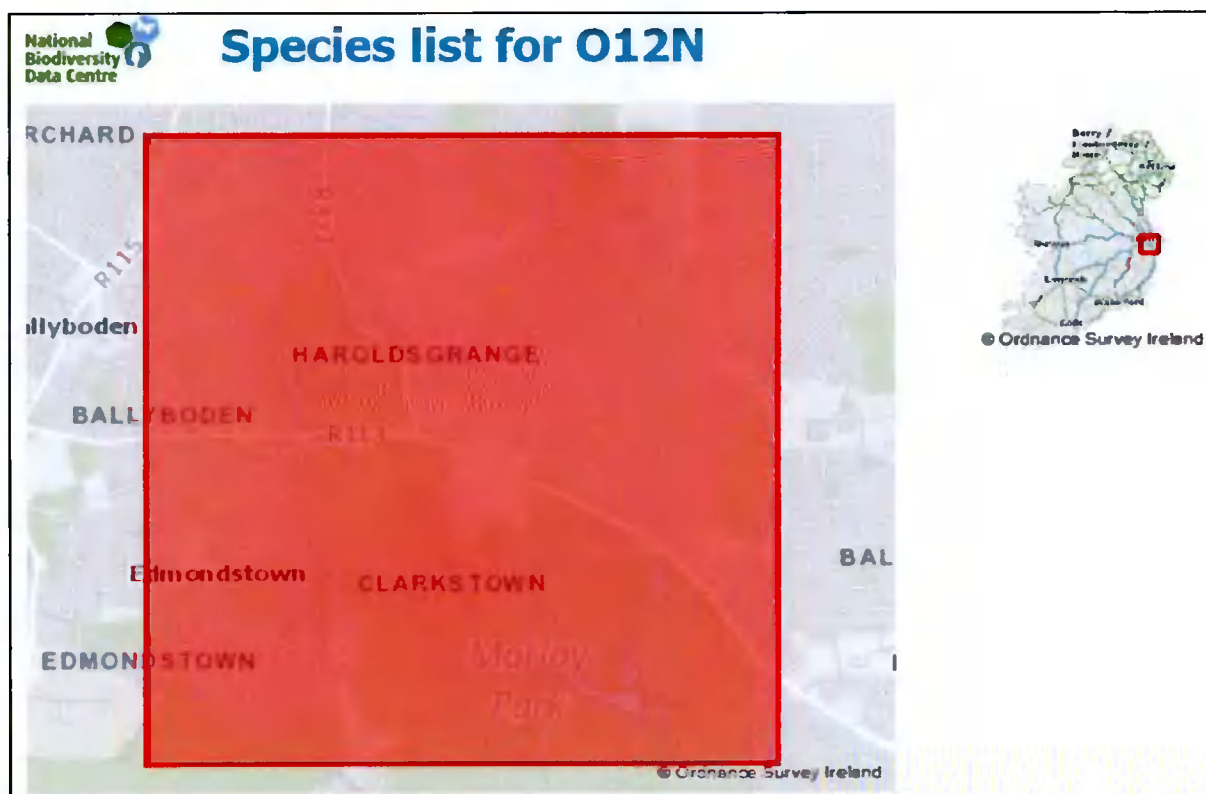


Figure 16: Location of polygon queried (National Biodiversity Data Centre)

Table 2: Species of conservation concern located within 1 km square (O12N)

Scientific Name	Common Name	Date of last record
<i>Hirundo rustica</i>	Barn Swallow	10/04/2015
<i>Larus ridibundus</i>	Black-headed Gull	31/12/2011
<i>Carduelis cannabina</i>	Common Linnet	31/12/2011
<i>Tringa totanus</i>	Common Redshank	31/12/2011
<i>Sturnus vulgaris</i>	Common Starling	31/12/2011
<i>Haematopus ostralegus</i>	Eurasian Oystercatcher	31/12/2011
<i>Larus marinus</i>	Great Black-backed Gull	05/03/2014
<i>Phalacrocorax carbo</i>	Great Cormorant	31/12/2001
<i>Larus argentatus</i>	Herring Gull	01/02/2013
<i>Delichon urbicum</i>	House Martin	31/12/2011

Scientific Name	Common Name	Date of last record
<i>Passer domesticus</i>	House Sparrow	31/12/2011
<i>Larus fuscus</i>	Lesser Black-backed Gull	31/12/2011
<i>Egretta garzetta</i>	Little Egret	05/03/2014
<i>Tachybaptus ruficollis</i>	Little Grebe	31/12/2011
<i>Larus melanocephalus</i>	Mediterranean Gull	31/12/2001
<i>Larus canus</i>	Mew Gull	31/12/2001
<i>Cygnus olor</i>	Mute Swan	31/12/2011
<i>Prunus laurocerasus</i>	Cherry Laurel	08/06/2019
<i>Gunnera tinctoria</i>	Giant-rhubarb	31/03/2014
<i>Fallopia japonica</i>	Japanese Knotweed	19/10/2018
<i>Myotis daubentonii</i>	Daubenton's Bat	01/06/2004
<i>Sciurus carolinensis</i>	Eastern Grey Squirrel	26/05/2018
<i>Meles meles</i>	Eurasian Badger	24/05/2018
<i>Lutra lutra</i>	European Otter	03/03/2012
<i>Nyctalus leisleri</i>	Lesser Noctule	31/10/2014
<i>Pipistrellus pipistrellus sensu lato</i>	Pipistrelle	31/10/2014
<i>Pipistrellus pygmaeus</i>	Soprano Pipistrelle	31/10/2014
<i>Erinaceus europaeus</i>	West European Hedgehog	16/08/2018
<i>Myotis mystacinus</i>	Whiskered Bat	01/06/2004

### 3.1.3 EIA Portal

The “EIA Portal” online resource was queried on the 5<sup>th</sup> of July 2021. It can be seen from Figure 17 that there is a significant registered development requiring EIA in the immediate vicinity.

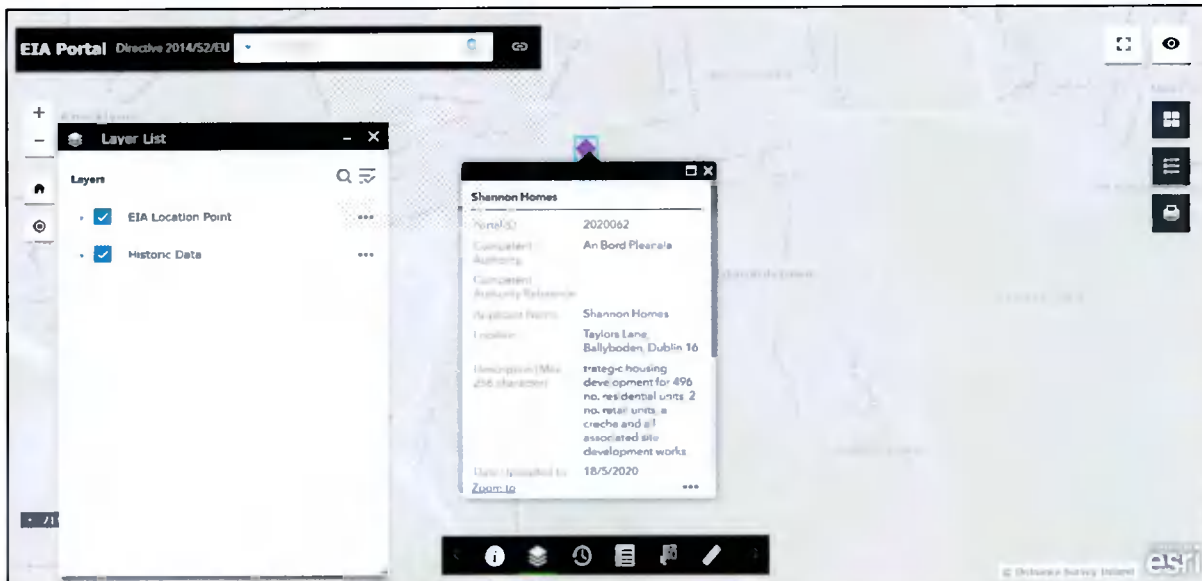


Figure 17: Excerpt from EIA portal indicating that there is a significant recent development requiring EIA registered in the database within the immediate vicinity of the proposed development

### 3.1.4 EPA database

A query of the EPA mapping database indicates that there are no Emissions Points associated with IEL, etc. located in the immediate vicinity of the proposed development.



Figure 18: Excerpt from EPA mapping database

### 3.1.5 SDCC planning

A query of the South Dublin Co. Council online planning resource indicates that there have been numerous planning permission applications in the general vicinity, including several developments on the eastern side of the Whitechurch Stream.



Figure 19: Excerpt of map from SDCC online planning map

## 3.2 Field Surveys

### 3.2.1 Botanical/Habitat surveys

The proposed development site comprises a portion of the private garden of Palmyra. The proposed development site and immediate *environs* were included within the survey presented here. Many of the species are non-native owing to the nature of the survey area (tended garden of considerable age). A complete species list is provided in Appendix I. The majority of the habitat present comprises tended lawn (GA2) although there is a wide variety of species occurring. The lawn is bounded by a mature hedgerow/treeline comprising primarily non-native species such as Beech and Sycamore, with numerous coniferous species including Scots Pine and Sitka Spruce. Of note was the presence of Bluebell Hybrid. (*Hyacinthoides non-scripta* X *Hyacinthoides hispanica*), often planted within gardens, within the proposed development site. Spanish Bluebell (*Hyacinthoides hispanica*), with blue pollen in contrast to the creamy-white pollen of *Hyacinthoides non-scripta* (our Native Bluebell) was present along the Whitechurch stream.



Figure 20: Palmyra and associated garden, with general area of proposed development site outlined in red





Figure 21: The majority of habitat comprises tended lawn



Figure 22: There is a "walled garden" occurring in the northern section of the proposed development site



Figure 23: Mature Beech tree

Of note, there is a shed present on site, which may have asbestos within the old roofing material – this should be identified as a potential risk prior to demolition.



Figure 24: Fragment of old roof covering of shed that may contain asbestos

### 3.2.2 Species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations of 2011 as amended

Spanish Bluebell (*Hyacinthoides hispanica*)/hybrids of same (*Hacinthoides X massartiana*) are present along the Whitechurch stream and within the development site. *H. hispanica* is listed on Part (1) of the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations of 2011 (as amended). Owing to the nature of the development, it is recommended to draw up and implement an Invasive Alien Plant Species Control and Management Plan to prevent the spread of any such species from the site.



Figure 25: Spanish Bluebell/Hybrid occurring on site

### 3.2.3 Breeding bird surveys

For the purposes of this survey, the results of the McKinnon List counts were added together, giving the number of birds observed, but also a proxy of abundance. A total of 30 species of breeding bird were observed to occur within the survey area or immediately adjacent (see Table 3). Of these, the most frequently recorded were Wood Pigeon, Wren, Blackbird, Robin and Song Thrush as might be expected given the habitat present. Owing to the presence of the Whitechurch stream and the woodland corridor, there are also some species that would less commonly be encountered in urban habitats such as Treecreeper, Stonechat and Long-tailed Tit. A survey for crepuscular species such as Barn Owl was undertaken on the night of the 30<sup>th</sup> of June 2021 utilising a Helion Pulsar XP thermal camera.

Table 3: Birds observed occur in in vicinity of proposed development and BOCCI-list status (2020 - 2026)

Scientific Name	Common Name	Frequency (% occurrence on McKinnon Lists)
<i>Columba palumbus</i>	WOOD PIGEON	100
<i>Troglodytes troglodytes</i>	WREN	86
<i>Turdus merula</i>	BLACKBIRD	79
<i>Erithacus rubecula</i>	ROBIN	71
<i>Turdus philomelos</i>	SONG THRUSH	71
<i>Pica pica</i>	MAGPIE	57
<i>Parus caeruleus</i>	BLUE TIT	50
<i>Regulus regulus</i>	GOLDCREST	43
<i>Parus major</i>	GREAT TIT	43
<i>Corvus monedula</i>	JACKDAW	43
<i>Carduelis carduelis</i>	GOLDFINCH	36
<i>Corvus frugilegus</i>	ROOK	36
<i>Sturnus vulgaris</i>	STARLING	36
<i>Streptopelia decaocta</i>	COLLARED DOVE	29
<i>Hirundo rustica</i>	SWALLOW	29
<i>Pyrrhula pyrrhula</i>	BULLFINCH	21
<i>Fringilla coelebs</i>	CHAFFINCH	21
<i>Phylloscopus collybita</i>	CHIFFCHAFF	21
<i>Delichon urbicum</i>	HOUSE MARTIN	21
<i>Sylvia atricapella</i>	BLACKCAP	14
<i>Peripatus ater</i>	COAL TIT	14
<i>Carduelis chloris</i>	GREENFINCH	14
<i>Passer domesticus</i>	HOUSE SPARROW	14
<i>Prunus modularis</i>	DUNNOCK	7
<i>Ardea cinerea</i>	HERON	7
<i>Corvus corax</i>	HOODED CROW	7
<i>Aegithalos caudatus</i>	LONG-TAILED TIT	7
<i>Anas platyrhynchos</i>	MALLARD	7

Scientific Name	Common Name	Frequency (% occurrence on McKinnon Lists)
<i>Saxicola torquata</i>	STONECHAT	7
<i>Certhia familiaris</i>	TREECREEPER	7



Figure 26: Wood Pigeon were so abundant on site that they frequently triggered Trail Cameras



Figure 27: Species such as Long-tailed Tit were only observed in proximity of the Whitechurch stream

### 3.2.4 Kingfisher Surveys

No evidence for Kingfisher was observed. Given the abundance of prey species (fish of various sizes were observed within the watercourse), there was a surprising lack of activity along the stream, with Grey Heron triggering the camera only once.



Figure 28: Grey Heron captured on trail cam

### 3.3 Mammal Surveys

#### 3.3.1 Non-volant mammal surveys

During the targeted non-volant mammal surveys evidence for use of the site by mammals was very limited. Numerous trails were identified with two “Hot-spots” of activity. Trail cameras were deployed at two of these “Hot-spots” (in addition to the Whitechurch Stream). During the period in which the trail cameras were deployed, however, activity was very limited. Brown Rat (*Rattus norvegicus*) and Grey Squirrel (*Sciurus carolinensis*) were the only mammals observed on the Trail Cam at the Whitechurch Stream. The Trail cams within the development site itself were triggered regularly by a large number of different cats. Evidence was also observed for Fox (*Vulpes vulpes*), Grey Squirrel (*Sciurus carolinensis*) and Brown Rat (*Rattus norvegicus*). It is likely that several other species occur in the vicinity intermittently, including Hedgehog (*Erinaceus europaeus*), and Pygmy Shrew (*Sorex minutus*). The presence of a very high population of cats may limit the use of the site by mammals. A survey for crepuscular mammals was undertaken on the night of the 30<sup>th</sup> June 2021 utilising a Helion Pulsar XP thermal camera.



Figure 29: Brown Rat recorded utilising the habitat adjacent to the Whitechurch stream



Figure 30: Cats triggered the cameras within the survey site most regularly with a large population of different cats



Figure 31: Fox were recorded passing through the area regularly



Figure 32: Grey Squirrel was recorded intermittently





Figure 33: Cat recorded at the second "Hot-spot" of activity



Figure 34: Fox recorded at the second "Hot-spot" of activity

**3.3.2 Otter Survey**

Although recorded within the 2km square in which the survey site is located, and despite an apparent abundance of prey, there were no indications of Otter observed at any point, during dedicated surveys or on any trail cam footage.

### 3.3.3 Bat Survey

#### 3.3.3.1 Winter Survey

There was minimal bat activity observed during the winter survey:

- Unit (1) – grounds - within trees by shed no activity recorded;
- Unit (2) – adjacent Whitechurch stream one bat pass (Leisler's Bat); and
- Unit (3) – adjacent to dwelling – no activity recorded

The almost total lack of activity over such a protracted length of time would indicate that there are no winter roosts in the immediate vicinity of the proposed development site.



Figure 35: Approximate locations of D500x units during winter survey

### 3.3.3.2 Summer surveys

#### 3.3.3.2.1 Static Surveys

It was expected that owing to the habitats present, there would be a relatively high activity of bats. Three Pettersson D500x units deployed were placed in those areas most likely to support bats during the period 8<sup>th</sup> of June – 15<sup>th</sup> of June 2021 in order to assess activity levels:

- Unit (1) was deployed in the small “walled garden area”;
- Unit (2) was deployed in the main garden; and
- Unit (3) was deployed adjacent to the main dwelling.



Figure 36: Locations of Pettersson D500x units during summer survey

- Unit (1) – Recorded only two bat passes of two species (Common Pipistrelle (1) and Soprano Pipistrelle (1) indicating no roost in the vicinity of the walled garden;
- Unit (2) – Recorded 50 bat passes of three species (Leisler’s Bat (10), Common Pipistrelle (39) and Soprano Pipistrelle (1). Low level of activity and the timing of activity indicates that there is no roost within the vicinity; and
- Unit (3) – Recorded a total of 175 bat passes of four species (Leisler’s Bat (22), Common Pipistrelle (120), Soprano Pipistrelle (22) and Nathusius’ Pipistrelle (11)) during the period 8<sup>th</sup> June – 15<sup>th</sup>, 2021. Considering the habitat present (Mature trees and Whitechurch stream), an average of only 25 bat passes per night is a very low total. The vast majority of bat passes were of Common Pipistrelle, a species which tends to continually forage at a spot, indicating that the number of bat passes over-

estimates the numbers of bats (one bat may have passed the recorded continually for several minutes). The pattern of timing of bat passes would indicate that there is no roost in the vicinity.

#### 3.3.3.2.2 Emergence/dawn survey

On the night of the 30<sup>th</sup> June and morning of 1<sup>st</sup> of July 2021, an emergence and dawn survey was undertaken by Dr Patrick Moran under ideal conditions (emergence survey starting temperature 18°C, no wind, no rain). Prior to the survey beginning, the main structures were examined utilising a drone (Mavic 2 Zoom) in order to identify any priority areas to focus surveys on (areas around roof with staining, etc.). There were no indications of a potential roosting site present, although there are areas of the roof suitable.



**Figure 37: Areas of roof where slate has become detached**

The emergence survey commenced at 21:30 (sunset at 22:00) and finished at 23:30. Conditions were optimal throughout the survey. The area was continually surveyed with hand-held bat detectors (Pettersson D1000X, Echometer 3plus and Pettersson D200X). A Pulsar Helion XP 50 Thermal Camera was utilised to survey the area.

A total of 23 bat passes of three species (Leisler's Bat (5), Common Pipistrelle (16) and Nathusius' Pipistrelle (2)) were observed during the emergence survey. All observed bats approached from the east.

A total of 21 bat passes of four species were recorded during the dawn survey (Leisler's Bat (12), Common Pipistrelle (5), Soprano Pipistrelle (2) and Nathusius' Pipistrelle (2)). All bats observed were flying toward the west with Leisler's flying at height.

The Petterson D500x Unit located along the Whitechurch Stream recorded only 24 bat passes of 3 species (Leisler's Bat (3), Common Pipistrelle (9) and Soprano Pipistrelle (12)) throughout the night. Of note, these bat passes were observed within a narrow time-span (21:50 – 22:26) with no activity throughout the night or the following morning. This would indicate that this stretch of the Whitechurch Stream is not an important commuting or foraging corridor for bats. This is almost certainly owing to the fact that there is no cover associated with the stream as it passes through a golf-course immediately to the south of the survey area, which would expose any bats utilising the corridor to predation.



Figure 38: Whitechurch stream passing through a golf course immediately south of the survey area, with no associated cover

The low level of bat activity would indicate no major roosts proximate to the proposed development and that the habitat present is not of high value for commuting/foraging bats.

## 4 Summary of findings

### 4.1 Elements or particular areas of specific potential for biodiversity or conservation interest;

As regard flora, the site is of relatively low local importance, as the site comprises part of a private garden. Of note is the presence of Spanish Bluebell/hybrids of same both within the site and site adjacent.

The site is of high local ecological value as regards avifauna, supporting a relatively wide variety of breeding bird species, including several Amber-listed species such as Starling. Although outside of the survey area, Grey Heron were observed to forage within the Whitechurch stream.

Fox was the primary wild mammal noted to utilise the habitat present (Grey Squirrel is an invasive species). There is a very high population of domestic cat as evidenced by the frequency with which the trail cams were triggered by different cats. The high numbers of cats likely limit the use of the habitat by smaller mammals.

### 4.2 Elements with the potential to damage the ecological integrity of the study area, such as Alien Invasive Plant Species

Spanish Bluebell is a species listed in Part (1) of the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations of 2011 (as amended) observed on/adjacent to the survey site. Hybrids were also present. It is recommended to draw up and implement an Alien Invasive (Third Schedule) Plant Species Control and Management Plan to eradicate this species from the site prior to development.

### 4.3 Presence and effectiveness of ecological corridors within the study area

The Whitechurch stream occurs within 100m of the eastern boundary of the proposed development site. It was assumed that there would be a high level of bat activity associated with the Whitechurch stream and associated habitat, in addition to potential habitat for Otter and Kingfisher. The results of the surveys here would indicate no evidence of Otter or Kingfisher and very limited use of the corridor by bats. This may be owing to the open nature of the stream to the south of the proposed development site, where there is no associated cover. This result demonstrates the importance of a

contiguous riparian habitat associated with watercourses in urban areas in order to maintain the ecological integrity and functioning of the watercourse.

The hedgerow/treeline habitat occurring at the periphery of the proposed development site provides a stepping stone of habitat, but the ecological value and effectiveness of this stepping stone is limited by the high density of domestic cats occurring.

#### **4.4 Conservation priorities regarding the identified biodiversity resource of the site**

The conservation priorities regarding the identified biodiversity resource identified should concentrate on the Whitechurch stream and associated corridor of habitats adjacent. The primary conservation priorities should be:

- To maintain and enhance the water quality of the Whitechurch Stream;
- To eradicate non-native Bluebell (including hybrids) from the site prior to works in order to prevent the spread of these species.

## 4.5 Potential impacts and mitigation measures

The proposed development site is a private garden with limited ecological importance, although the habitat is of local importance for breeding birds.

### 4.5.1 Potential Impacts

The primary impacts during the construction phase will be:

- Potential impacts on breeding birds through disturbance/loss of habitat;
- Potential impacts on the water quality of the Whitechurch stream; and
- Potential impacts associated with propagules of Alien Invasive Plant Species.

The primary impact during operation will be:

- Potential impacts on the water quality of the Whitechurch stream; and
- Potential impacts associated with propagules of Alien Invasive Plant Species;

### 4.5.2 Mitigation Measures

#### 4.5.2.1 Impacts on water quality (construction)

The proposed development is within 100m of the Whitechurch stream and associated ecological corridor. There is always potential for contamination/pollution events to occur whenever construction is undertaken in the vicinity of water bodies through accidents, spills, etc. No major construction will be undertaken in the immediate vicinity of the Whitechurch stream. During all construction works, however, protection of water quality is paramount, and should be ensured by implementing the following:

Any contractor shall undertake all proposed works in such a manner as to avoid degradation of water quality by pollution (in particular, from hydrocarbons, chemicals.).

Specific measures to be taken to prevent the above shall include the following:

- The Undertaker's method statement should make specific reference to measures for the protection of water quality;
- Undertaker's plant, equipment etc. shall be free of any mechanical defects, and be well maintained so as to prevent soil or fuel leaks;



- Undertaker's plant, equipment etc. must arrive at the site free from propagules of any Alien Invasive Plant Species;
- The Undertaker's method statement should make specific reference to measures for the protection of water quality, to include measures to ensure no spillage of fuel or cement/lime-based material or any other leakages occur to any drains, etc. for the duration of the works;
- All works will be undertaken in accordance with the following best practice guidelines:
  - CIRIA Control of Water Pollution from Construction sites – Guidance for Consultants and Contactors (2001).
  - Eastern Regional Fisheries Board Guidance Notes 'Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites' (Eastern Regional Fisheries Board, 2006);
  - NRA Guidelines (2006) NRA Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes.

#### 4.5.2.2 Potential impacts associated with Alien Invasive (Third Schedule) Plant Species (construction)

Spanish Bluebell (*Hyacinthoides hispanica*)/hybrids of same is present on site. This species is listed in Part (1) of the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations of 2011 (as amended). As such, this species (including hybrids) must be eradicated from site prior to any activities on site.

Given the requirement for excavation/backfilling and potential importation of material, there is a significant potential for the introduction of propagules of one or more Alien Invasive Plant species. The three primary threats are Japanese Knotweed, Himalayan Balsam and Giant Hogweed, which are recorded in the vicinity.

##### 4.5.2.2.1 Japanese Knotweed – *Fallopia japonica*

This plant is a rhizomatous perennial, capable of reaching 2m in height. This plant spreads exclusively by vegetative means, spreading very aggressively under disturbed conditions. The plant is capable of forming extensive monoculture stands. There is a negative impact on ecosystem function and biodiversity through a number of mechanisms – primarily through the shading-out of native plants due to the rapidity with which large stands of the plant can form. In addition, this plant has a deleterious effect on the banks of waterways owing to the fact that during the winter, when *F. japonica* dies back, there is little or no vegetation growing underneath, and hence nothing to prevent

erosion of the bank. This species is well established in Ireland and is rapidly spreading throughout the country, especially by roadsides and along watercourses.



Figure 39: Established population of Japanese Knotweed occurring at a quarrying operation in Wexford

---

#### 4.5.2.2.2 Himalayan Balsam

*Impatiens glandulifera* is one of the tallest annuals occurring in Europe, growing up to 150 cm. It is a native of the Himalayas and has rapidly become one of the most problematic of invasive species in Europe, particularly along watercourses. The dominance of large stands of *I. glandulifera* along watercourses causes problems for stream management in addition to the negative impact on native flora due to the formation of large monoculture stands. The massive production of nectar to induce pollinators, in addition to the “explosive” means by which seeds are spread (pods explode on contact, hurling seeds away from the parent plant) contribute to the ability of this plant to out-compete native species. This plant is rapidly becoming a serious threat to biodiversity along Ireland’s waterways.



Figure 40: Himalayan Balsam

---

4.5.2.2.3 Heracleum mantegazzianum, Giant Hogweed.

Giant Hogweed, as its name suggests, can reach heights of 5m. This perennial reproduces exclusively by seed, but can produce up to 100,000 seeds per individual, with up to 90% germination rate. In addition to this, this plant is capable of self-fertilisation, which means that one plant is capable of resulting in the invasion of a new habitat. Like *F. japonica*, and *I. glandulifera*, it is the tendency of Giant Hogweed to grow very tall very quickly, forming a monospecific stand that results in the negative impact of this species on native biodiversity. It is, however, the phototoxic sap of this species, and the increasing number of human injuries associated with this sap that has made *H. mantegazzianum* one of the most problematic alien invasive plant species throughout Europe.



Figure 41: Giant Hogweed occurring at a location in Meath along the River Boyne

The drawing up and implementation of an Alien Invasive Plant Species Management and Control Plan should be undertaken in order to ensure that:

- Spanish Bluebell/hybrids of same eradicated from the site prior to any demolition/construction activity such that it cannot spread within/from the site; and
- No propagules of any other plant species listed in Part (1) of the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations of 2011 (as amended) are introduced to the site during construction.

The drawing up and implementation of an Alien Invasive Plant Species Management and Control Plan should be undertaken in order to ensure that no propagules of any species listed in Part (1) of the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations of 2011 (as amended) are introduced to the site during construction or operation.

## 5 Conclusions

---

Given the nature of the habitat present (mature garden associated with Palmyra House) and the scale of the proposed development, the proposed development will not have any significant negative ecological impacts, assuming mitigation measures are implemented, and the proposed development is undertaken in accordance with the Wildlife Act (1976) as Amended.

## 6 Appendix I – list of plant species observed

Scientific name	Common Name
<i>Acer pseudoplatanus</i>	Sycamore
<i>Aconitum napellus</i>	Monkshood
<i>Aegopodium podagraria</i>	Ground Elder
<i>Agrostis stolonifera</i>	Creeping Bent
<i>Alliaria petiolata</i>	Garlic Mustard
<i>Anthriscus sylvestris</i>	Cow Parsley
<i>Arrhenatherum elatius</i>	False Oat-grass
<i>Arum maculatum</i>	Lords and Ladies
<i>Atrichum undulatum</i>	Common Smoothcap
<i>Bellis perennis</i>	Daisy
<i>Brachythecium rutabulum</i>	Rough-stalked Feather-
<i>Capsella bursa-pastoris</i>	Shepherd Purse
<i>Cardamine pratense</i>	Cuckoo Flower
<i>Cedrus atlantica</i>	Atlantic Cedar
<i>Cerastium fontanum</i>	Mouse-ear Chickweed
<i>Cirsium vulgare</i>	Spear Thistle
<i>Cotoneaster sp</i>	Cotoneaster
<i>Crataegus monogyna</i>	Hawthorn
<i>Crocospia crocosmiflora</i>	Montbretia
<i>Cyclamen sp</i>	Cyclamen
<i>Cynosurus cristatus</i>	Crested Dogs-tail
<i>Dactylis glomerata</i>	Cocks-foot
<i>Epilobium ciliatum</i>	Canadian Willowherb
<i>Eucalyptus sp</i>	Eucalyptus
<i>Euphorbia helioscopia</i>	Sun Spurge
<i>Fagus sylvatica</i>	Beech
<i>Festuca rubra</i>	Red Fescue
<i>Fraxinus excelsior</i>	Ash
<i>Galium aparine</i>	Cleavers
<i>Geranium robertianum</i>	Herb Robert
<i>Geum urbanum</i>	Herb Bennet
<i>Glechoma hederacea</i>	Ground Ivy
<i>Hedera angustifolia</i>	Ivy
<i>Hemerocallis sp</i>	Day Lily
<i>Heracleum sphondylium</i>	Lesser Hogweed
<i>Holcus lanatus</i>	Yorkshire Fog
<i>Hyacinthoides hispanica/x massartiana</i>	Spanish Bluebell/Hybrid
<i>Hypericum androsenum</i>	Tutsan
<i>Ilex aquifolium</i>	Holly
<i>Laburnum sp</i>	Laburnum
<i>Lamium purpurea</i>	Red-dead Nettle
<i>Lapsana communis</i>	Nipplewort
<i>Leycesteria formosa</i>	Pheasantberry

Scientific name	Common Name
<i>Myosotis secunda</i>	Creeping Forget-me-not
<i>Picea stichensis</i>	Sitka spruce
<i>Pinus sylvestris</i>	Scots Pine
<i>Plantago lanceolata</i>	Ribwort Plantain
<i>Poa trivialis</i>	Rough Meadowgrass
<i>Polystichum setiferum</i>	Soft Shield-fern
<i>Potentilla sterilis</i>	Barren Strawberry
<i>Prunus avium</i>	Cherry
<i>Prunus institia</i>	Damson
<i>Prunus laurocerasus</i>	Laurel
<i>Pyrus communis</i>	Pear
<i>Ranunculus acris</i>	Meadow Buttercup
<i>Ranunculus repens</i>	Creeping Buttercup
<i>Rhytidiadelphus squarrosus</i>	Springy Turf-moss
<i>Ribes uva-crispa</i>	Gooseberry
<i>Rosa sp</i>	Rose species
<i>Rubus fruticosus agg</i>	Bramble
<i>Rubus idaeus</i>	Raspberry
<i>Rumex crispus</i>	Curled-leaf dock
<i>Sambucus nigra</i>	Elder
<i>Senecio jacobaea</i>	Ragwort
<i>Senecio vulgaris</i>	Groundsel
<i>Sonchus oleraceus</i>	Smooth Sow-thistle
<i>Stellaria media</i>	Chickweed
<i>Syringa</i>	Lilac
<i>Taraxacum officinale agg</i>	Dandelion
<i>Taxus baccata</i>	Yew
<i>Trifolium repens</i>	White Clover
<i>Urtica dioica</i>	Nettle
<i>Veronica chamaedrys</i>	Germander Speedwell
<i>Veronica hederifolia</i>	Ivy-leaved Speedwell
<i>Vicia sepium</i>	Bush Vetch
<i>Viola canina</i>	Dog Violet

# 7 Appendix II – Habitat Map





## 8 References and Bibliography

---

Furlonger CL, Dewar HJ and Fenton MB (1987). Habitat use by foraging insectivorous bats. *Canadian Journal of Zoology*, **65**, 284 – 288.

Rydell J (1992). Exploitation of insects around streetlamps by bats in Sweden. *Functional Ecology*, **6**, 744 – 750.

Environmental Protection Agency (1995) Advice notes on current practice in the preparation of Environmental Impact Statements. EPA, Wexford, Ireland.

Entwhistle A, Racey P and Rydell J (1996). Timing of foraging flights of three species of bats in relation to insect activity and predation risk. *Oikos* **76**, pp 243 - 252.

Environmental Protection Agency (1997) Draft Guidelines to be contained in the information to be contained in Environmental Impact Statements. EPA, Wexford, Ireland.

European Commission (2000) Managing Natura 2000 Sites: The provisions of Article 6 of the 'Habitats' Directive. Luxembourg: Office for Official Publications of the European Communities

Fossitt, J. (2001) A Guideline to Habitats in Ireland. The Heritage Council, Kilkenny, Ireland.

European Commission (2002) Assessment of plans and projects significantly affecting Natura 2000 sites. Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC. Luxembourg: Office for Official Publications of the European Communities

Downs N, Beaton V, Guest J, Polanski J, Robinson S, and Racey P (2003). The effects of illuminating the roost entrance on the emergence behaviour of *Pipistrellus pygmaeus*. *Biol. Conserv*, **111**, pp 247–252.

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.

European Commission (2007) European Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC; Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the Commission.

Marnell F, Kingston N and Looney D (2009). Ireland Red List No. 3: Terrestrial Mammals, National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin, Ireland.

DEHLG (2009) Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities. DEHLG

Stace C (2010). New Flora of the British Isles (3<sup>rd</sup> Edn), Cambridge University Press, UK.

DEHLG (2011) European Communities (Birds and Natural Habitats) Regulations 2011. DEHLG.

Parnell J and Curtis T (2012). Webb's An Irish Flora. Cork University Press, Cork, Ireland.

Stone EL, Jones G and Harris S (2012). Conserving energy at a cost to biodiversity? Impacts of LED lighting on bats. *Global Change Biology*

NPWS (DEHLG) (2013). The Status of EU Protected Habitats and Species in Ireland. DEHLG.

Environmental Protection Agency. (2017) Draft Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR). EPA, Wexford, Ireland.

[www.biodiversityireland.ie](http://www.biodiversityireland.ie) – website of the National Biodiversity Data Centre

[www.sdcc.ie](http://www.sdcc.ie) – website of South Dublin County Council

[www.npws.ie](http://www.npws.ie) – website of the National Parks and Wildlife Service, source of information for data regarding Natura 2000 sites and Article 17 Conservation Assessments.

[www.europa.eu](http://www.europa.eu) – official website of the European Union, source of information on EU Directives.