

5.7 Biodiversity

5.7.1 Introduction

5.7.1.1 Quality Assurance

This report was written by Kate-Marie O'Connor GradCIEEM MSc BSc (Hons) and has been reviewed by Paul Scott CEcol, CEnv MCIEEM MSc BSc (Hons).

Kate-Marie O'Connor holds an honours degree in Natural Sciences from Trinity College Dublin, specialising in Botany, and obtained a distinction in her Masters in Environmental Modelling, Monitoring and Reconstruction from the University of Manchester. She is a Graduate Member of the CIEEM. Her experience as a senior consultant ecologist has focused on the preparation of ecological assessments, most frequently for EIA and AA, with all the key elements of those processes including planning for and undertaking ecological baseline surveys, desktop studies, analysis and presentation of data and results, undertaking assessment of impacts and identifying appropriate mitigation measures. She has worked on a range of public and private sector schemes in the Ireland and the UK, including a variety of linear infrastructure projects. Kate-Marie has a specialist interest in botany but is also competent in a range of fauna surveys (e.g. mammals including bats and otters, and newts). Kate-Marie regularly prepares information for Ecological Impact Assessment and Appropriate Assessment reports, either as lead or co-author, depending on the project requirements.

Paul Scott is Director with Scott Cawley Ltd. He holds a first class honours degree in Environmental Biology from the University of Liverpool and a Masters in Pollution and Environmental Control at the University of Manchester. He is a Chartered Ecologist and Environmentalist and a Full Member of the Chartered Institute of Ecology and Environmental Management. Paul Scott was responsible for checking and approval of this report and provided additional text where required.

5.7.1.2 Background

Scott Cawley Ltd. was commissioned by Stephen Little & Associates on behalf of Dublin City Council and PSCQ Developments Ltd (Joints Applicants) to undertake an Ecological Impact Assessment (EcIA) for a proposed development at lands located on Parnell Square North, Dublin 1 (see Figure 5.7.1 below for location of survey area, which encompasses the proposed development site).

The aims of this ecological impact assessment were 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.

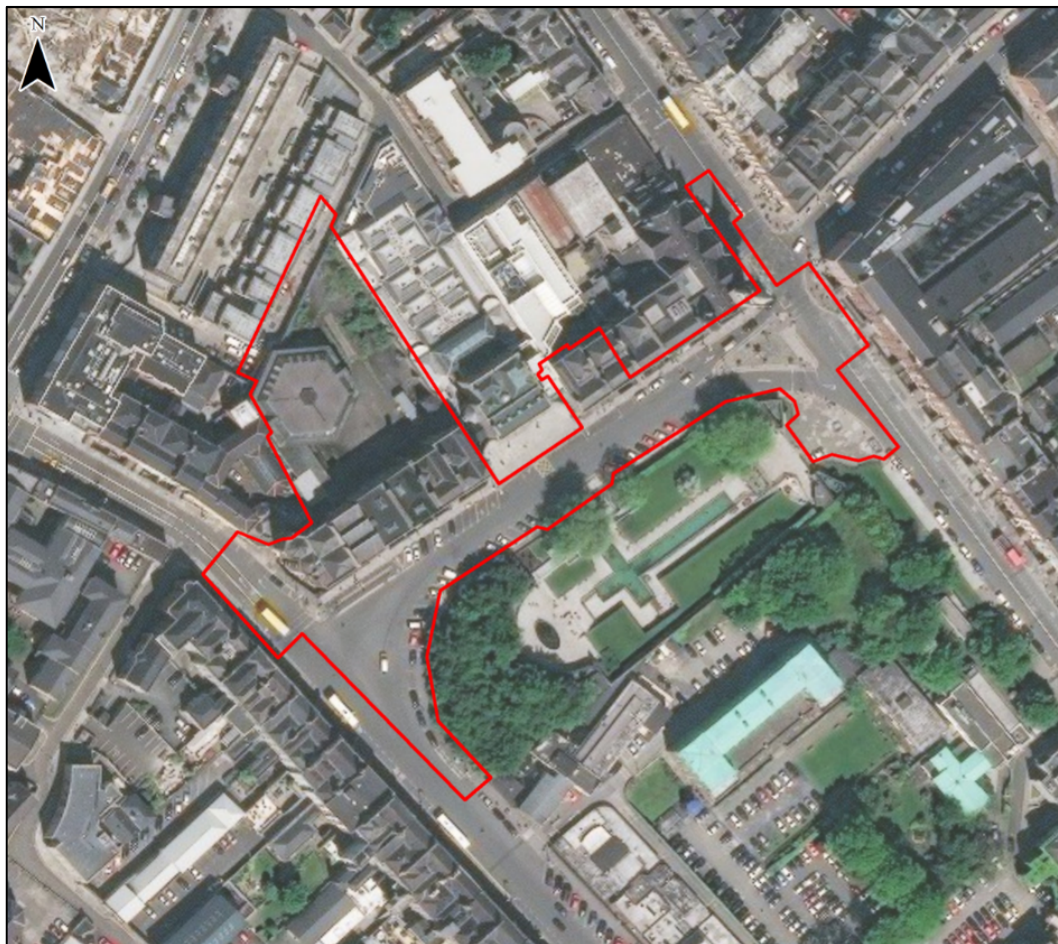


Figure 5.7.1: Study area (highlighted by redline boundary), within which the proposed development is located, in the context of its surroundings

5.7.1.3 Planning, Policy and Legislation

The assessment of the likely impacts of the proposed development on ecological resources has considered legislation, policy documents, and guidelines outlined in the following section.

5.7.1.3.1 International and National Legislation

The following international legislation is relevant to the proposed development:

- Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (as amended); hereafter the 'Habitats Directive'.
- Directive 2009/147/EEC; hereafter the 'Birds Directive'.

The following national legislation is relevant to the proposed development:

- Wildlife Act, 1976 and Wildlife (Amendment) Act (2000) (as amended); hereafter collectively referred to as the Wildlife Acts. The Wildlife Acts are the principal pieces of legislation at national level for the protection of wildlife and for the control of activities that may harm wildlife. All bird species, 22 other animal species or groups of species and 86 species of flora are protected under these pieces of legislation.
- Planning and Development (Amendment) Act 2010 (as amended). This piece of legislation is the basis for Irish Planning. Under the legislation, development plans (usually implemented at local authority level) must include mandatory objectives for the conservation of natural heritage and for the conservation of European Sites.
- European Communities (EC) (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011 (as amended); hereafter the 'Birds and Habitats Regulations'. This legislation transposes the Habitats and Birds Directives into Irish law. It also contains regulations (49 and 50) that deal with invasive species (those included within the Third Schedule).
- Flora (Protection) Order, 2015. This lists species of plant protected under Section 21 of the Wildlife Act, 1976.

5.7.1.3.2 Local Authority Plans

The local authority for the proposed development in Parnell Square is Dublin City Council (DCC). Plans and developments within Dublin

City County must comply with the policies and objectives of the Dublin City Development Plan 2016 – 2022 (DCC, 2016), which in turn references the National Biodiversity Plan 2017-2021. (DAHG, 2017), and the Dublin City Biodiversity Action Plan 2015-2020 (DCC, 2015).

Dublin City Development Plan 2016 – 2022 Policies

The following policies from the Dublin City Development Plan 2016 – 2022 (DCC, 2016) are relevant to the proposed development as several designated sites are within the downstream receiving environment, and due to the potential for the site to host protected species, and/or invasive species.

- **GI23:** “To protect flora, fauna and habitats, which have been identified by Articles 10 and 12 of Habitats Directive, Birds Directive, Wildlife Acts 1976–2012, the Flora (Protection) Order 2015 S.I No. 356 of 2015, European Communities (Birds and Natural Habitats) Regulations 2011 to 2015.”
- **GI24:** “To conserve and manage all Natural Heritage Areas, Special Areas of Conservation and Special Protection Areas designated, or proposed to be designated, by the Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.”
- **GIO24:** “To develop Biosecurity Codes of Practice to deal with invasive species and ensure compliance with EU (Birds and Natural Habitats) Regulations 2011 and EU Regulations 2014 on the prevention and management of the introduction and spread of invasive alien species.”

5.7.2 Methodology

5.7.2.1 Scope

The zone of influence¹ of the proposed development is a distance within which it could potentially affect key ecological receptors (KERs)². There is no set recommended distance for the zone of influence of a project, and it is likely to vary according to each KER in question. The potential zone of influence of the proposed development is regarded to be relatively limited and less than 1km from the site perimeter in most cases (with the exception of European sites).

5.7.2.2 Desk Study

A desk study was undertaken on 17th May 2018 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 www.osi.ie – Utilised for desk review of potential habitats within the subject lands and their surroundings;
- National Parks and Wildlife Service (NPWS) Map Viewer www.npws.ie/npwsviewer – Accessed for information on species records within 10km grid squares O13 within which the site is located and local protected sites;
- Data on local river catchments from www.catchments.ie – Accessed for details on local rivers and the catchments they drain into were queried;
- Myplan.ie website <http://www.myplan.ie/webapp/> – Accessed to retrieve information on local land zoning;
- 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 www.biodiversityireland.ie – A query for the aforementioned species within a 2km radius of the subject lands;

¹ 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.

² KERs are defined in accordance with NRA guidelines (2009) as being "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 5.7.1.

- Birds of Conservation Concern in Ireland (Colhoun & Cummins, 2013) – Consulted for information on the status of birds in Ireland; and,
- Information on the location, nature and design of the proposed development supplied by the applicant's design team.

5.7.2.3 Field Survey Methodology

5.7.2.3.1 Habitats & Flora Survey

The subject lands and environs were surveyed by Scott Cawley. A habitat survey was conducted on the 14th August 2015 and the 9th May 2018. 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 parentheses. Plant nomenclature follows the Checklist of the Flora of Britain & Ireland (BSBI, 2007).

5.7.2.3.2 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.

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 (NPWS, 2006);
- Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes (NRA, 2006a); and,
- Design Manual for Roads and Bridges: Nature Conservation Advice in Relation to Bats (Highways Agency, 2001).

A daytime visual assessment of buildings located within the proposed development site for the presence of bats was undertaken by an Ecologist from Scott Cawley on the 14th August 2015 (under National Parks and Wildlife Service licence DER/BAT 2015-02). The buildings assessed included: the Georgian buildings No. 27-21 and the hexagon building located in the courtyard, south-east of Bethesda Place. On the day of the survey, building No. 28 was inaccessible due to health and safety reasons. The assessment involved the full examination of the external and internal areas of each building, where accessible, for signs of bat activity and

potential features that may be utilised by bats. Bat activity is usually detected by the following signs:

- Bat droppings (these will accumulate under an established roost or under access points);
- Insect remains (under feeding perches);
- Oil (from fur) and urine stains;
- Scratch marks; and,
- Bat corpses.

Dusk and dawn bat activity surveys were carried out by two Scott Cawley Ecologists on the 15th July 2015 and 16th July 2015 respectively. This involved a dusk survey, which began at sunset and lasted approximately two hours afterwards, and a dawn survey, which began approximately two hours before sunrise and ended ten minutes after sunrise (see Table 5.7.1 below for information on survey times and weather conditions).

Table 5.7.1: Survey Times and Weather Conditions

Dates	Dusk Survey Times (sunset)	Dawn Survey Times (Sunrise)	Temperature	Weather Conditions
15 th July 2015	21:45 – 23:26 (21:45)	-	14°C - 11°C	Dry, clear, slight breeze
16 th July 2015	-	03:22 – 05:20 (05:10)	7°C - 9°C	Dry, cloudy, calm
16 th July 2015	-	03:22 – 05:20 (05:10)	7°C - 9°C	Dry, cloudy, calm

The dusk and dawn surveys were completed using both direct observation and a bat detector. The surveyors used a Petterson Ultrasound Detector D 240x with time expansion capability.

Echolocation calls were recorded using Zoom H1 Handy Recorders and analysed using sound analysis software "BatSound". Levels of illumination were measured over the course of both dusk and dawn surveys, using a Voltcraft MS-1300 Digital Luxmeter 0.1 - 50 000 lx. The aims of both surveys were to identify any bat activity within or directly adjacent to the proposed development site, to identify bat species present and to count the number of individuals identified.

During each survey, one surveyor surveyed the Georgian Buildings No. 28-23 and No. 22-21 from the direction of Parnell Square North, while the other surveyed these buildings and the modern hexagon building from the courtyard area, located south-east of Bethesda

Place. They walked at a slow pace in order to monitor any potential bat activity. All bat activity within the survey area was noted (i.e. commuting behaviour).

A static bat detector (Anabat SD1 CF Bat Detector) was placed off the ground on a windowsill of one of Georgian buildings and was set to record bat calls from 21:45 on the 15th July 2015 to 05:15 on the 16th July 2015. Data collected on the Anabat was then analysed using AnalookW Version 3.3q.

A post-dusk bat emergence survey was carried out by a Scott Cawley Ecologist, using direct observation and handheld ultrasound detector (Elekon BatLogger M), on the 9th May 2018 to supplement the results of surveys undertaken in 2015. This survey began 15 minutes before sunset (i.e. at 20:53, sunset was at 21:08).

Recordings from the dusk survey were analysed using Elekon BatExplorer software; however no bat echolocation calls were recorded.

During the daytime surveys and over the course of both the dusk and dawn bat surveys, bird activity across the survey area was recorded using a combination of direct sightings (using binoculars where necessary) and identification of songs and calls.

5.7.2.3.3 Limitations of Field Surveys / Data Deficiencies

During the internal building inspections undertaken in 2015, it was not possible to inspect Building No. 28, the rooftops of all eight buildings and some attic spaces for the presence of bats, as these areas were inaccessible due to health and safety reasons. As a result, it was not possible to conclusively state whether or not bat species may have been present within these areas of the proposed development site. In order to ensure that this limitation does not affect the assessment of potential impacts on bats, a precautionary approach has been applied to the interpretation of the results of the bat surveys at the proposed development site and mitigation measures have been recommended to ensure that there is no significant impact on bats

Breeding bird activity within the site was recorded during the daytime surveys and not during a dedicated breeding bird survey during the optimal times. This will not impact on the findings of these results, as there is no vegetation or wall features located within the site that is considered to be suitable breeding bird habitat. Nesting birds were restricted to the rooftops of the Georgian buildings.

5.7.2.4 Ecological Evaluation and Impact Assessment

5.7.2.4.1 Site Evaluation Criteria

The criteria used to assess the ecological value (Volume 2, Appendix 5.7.1) and significance of the site for habitats and species 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 and Coastal (CIEEM, 2016).

5.7.2.4.2 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 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 Volume 2, Appendix 5.7.1. 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 5.7.2.

Table 5.7.2: Maximum level of impact significance for key ecological receptors

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

Impacts are described as being either significant or not significant. Broadly, significant effects encompass impacts on structure and function of defined sites, habitats or ecosystems and the conservation status of habitats and species (including extent, abundance and distribution) (CIEEM, 2016). In this instance, effects are qualified with reference to a geographic scale as outlined in Volume 2, Appendix 5.7.1 of this EIAR.

5.7.3 Receiving Environment

5.7.3.1 Land Use Zoning

The subject lands have been zoned as “Georgian conservation areas” with the zoning objective to “to protect the existing architectural and civic design character, and to allow only for limited expansion consistent with the conservation objective” within the Dublin City Development Plan 2016-2022 (DCC, 2016). The surrounding lands are also zoned as this, as well as:

- “Amenity/Open Space Lands/Green Network” with the objective to “To preserve, provide and improve recreational amenity and open space and green networks”;
- “Sustainable residential neighbourhoods” with the objective to “to protect, provide and improve residential amenities”;
- “District Centres” with the objective to “To provide for and improve mixed-services facilities”; and,
- “City Centre” with the objective to “To protect the existing architectural and civic design character, and to allow only for limited expansion consistent with the conservation objective”.

5.7.3.2 Designated Sites

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.

The subject lands are not designated as an SAC, SPA, NHA, or pNHA, however, potential pathways of connectivity between the subject lands and designated sites have been identified. The AA Screening assessment considered potential source-pathway-

receptor links through hydrological means and identified connectivity via the surface water networks and Dublin Bay European sites. The closest European sites is South Dublin Bay and River Tolka Estuary SPA [004024], which is approximately 2.3km to the north-west of the proposed development site. The closest pNHA is the Royal Canal (SY002103) which is c. 860m north-east of the proposed development.

The subject lands are not located within any nationally designated site. There are 22 pNHAs located within the vicinity (15km) of the subject lands (see Figure 5.7.3 overleaf). The only potential impact pathway between the proposed development and pNHAs with hydrological linkage is via the surface water networks.

Given the proximity of nationally and European designated sites, and identified potential source-pathway-receptor links, designated sites have been considered as a key ecological receptor.

A list of European and national designated sites within the vicinity of the proposed development, along with their qualifying interests, is included in Volume 2, Appendix 5.7.2. The locations of these designated sites in relation to the proposed development are illustrated in Figure 5.7.2 and Figure 5.7.3, overleaf.

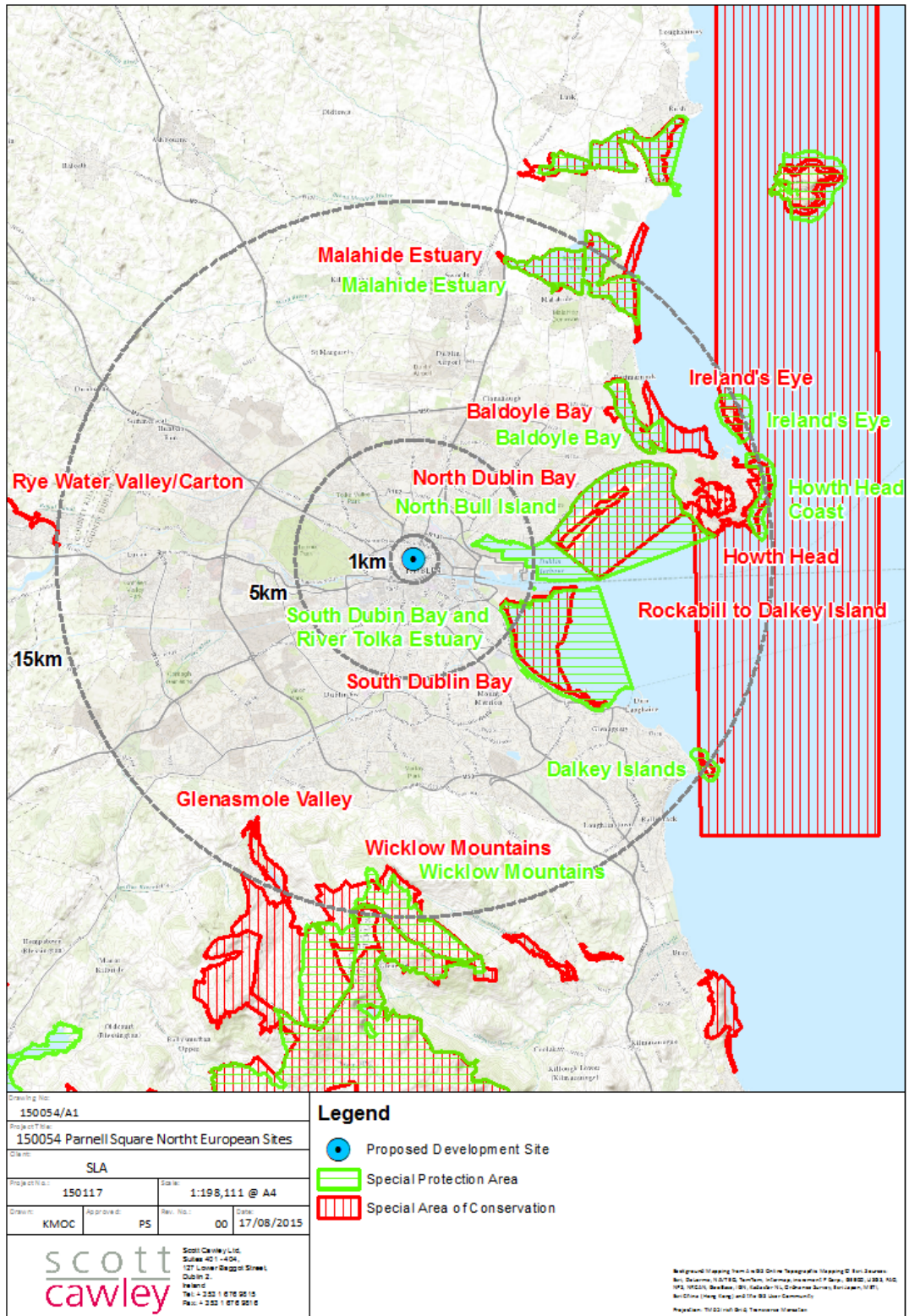


Figure 5.7.2: The proposed development in the context of European sites within the vicinity of the proposed development



Figure 5.7.3: The proposed development in the context of nationally designated sites within the vicinity (15km) of the proposed development

5.7.3.3 Habitats and Flora

5.7.3.3.1 Desk Study Flora Records

Opposite-leaved pondweed *Groelandia densa*, which is protected under the Flora (Protection) Order 2015, was recorded within 2km of the subject lands in 1999 on the Royal Canal.

The NPWS search returned the historic records (i.e. from 1866 to 1991) of the following protected flora species under the Flora (Protection) Order 2015 within 2km of the subject lands: opposite-leaved pondweed, meadow barley *Hordeum secalinum*.

The NBDC database search returned records of the following 17 invasive plant species within 2km of the subject lands, i.e.:

- Himalayan balsam *Impatiens glandulifera*, Japanese knotweed *Fallopia japonica*, Giant knotweed *F. sachalinensis*, *F. japonica* x *sachalinensis* (*F. x bohémica*) Canadian waterweed *Elodea Canadensis*, Nuttall's waterweed *Elodea nuttallii*, curly waterweed *Lagarosiphon major*, New Zealand Pygmyweed *Crassula helmsii*, parrot's-feather *Myriophyllum aquaticum*, giant hogweed *Heracleum mantegazzianum*, *Rhododendron ponticum* and three-cornered garlic *Allium triquetrum*: the NBDC lists these species as high impact invasive species apart from three-cornered garlic which is a medium impact species. They are all listed on the Third Schedule of the Birds and Habitats Regulations and is therefore subject to restrictions under Regulations 49 and 50 of the same legislation, which prohibits the introduction and dispersal, and the dealing and keeping of listed species. The site survey confirmed that none of these plants occur within the proposed development site.
- Butterfly-bush *Buddleja davidii*, Canadian fleabane *Conyza Canadensis*, sycamore *Acer pseudoplatanus*, traveller's-joy *Clematis vitalba* and Cherry laurel *Prunus laurocerasus*: the NBDC lists these species as a medium impact invasive species apart from cherry laurel which is listed as high impact species. It is not listed on the Third Schedule of the Birds and Habitats Regulations. The site survey confirmed that two of these species of plant does occur along the southern boundary of the proposed development site in an adjacent garden.

5.7.3.3.2 Field Surveys - Flora

The following habitat types (following Fossitt 2000) were identified within the proposed development site (see Figure 5.7.4 below for habitat maps).

- Buildings and Artificial Surfaces (BL3); and,
- Recolonising and Bare Ground (ED3)

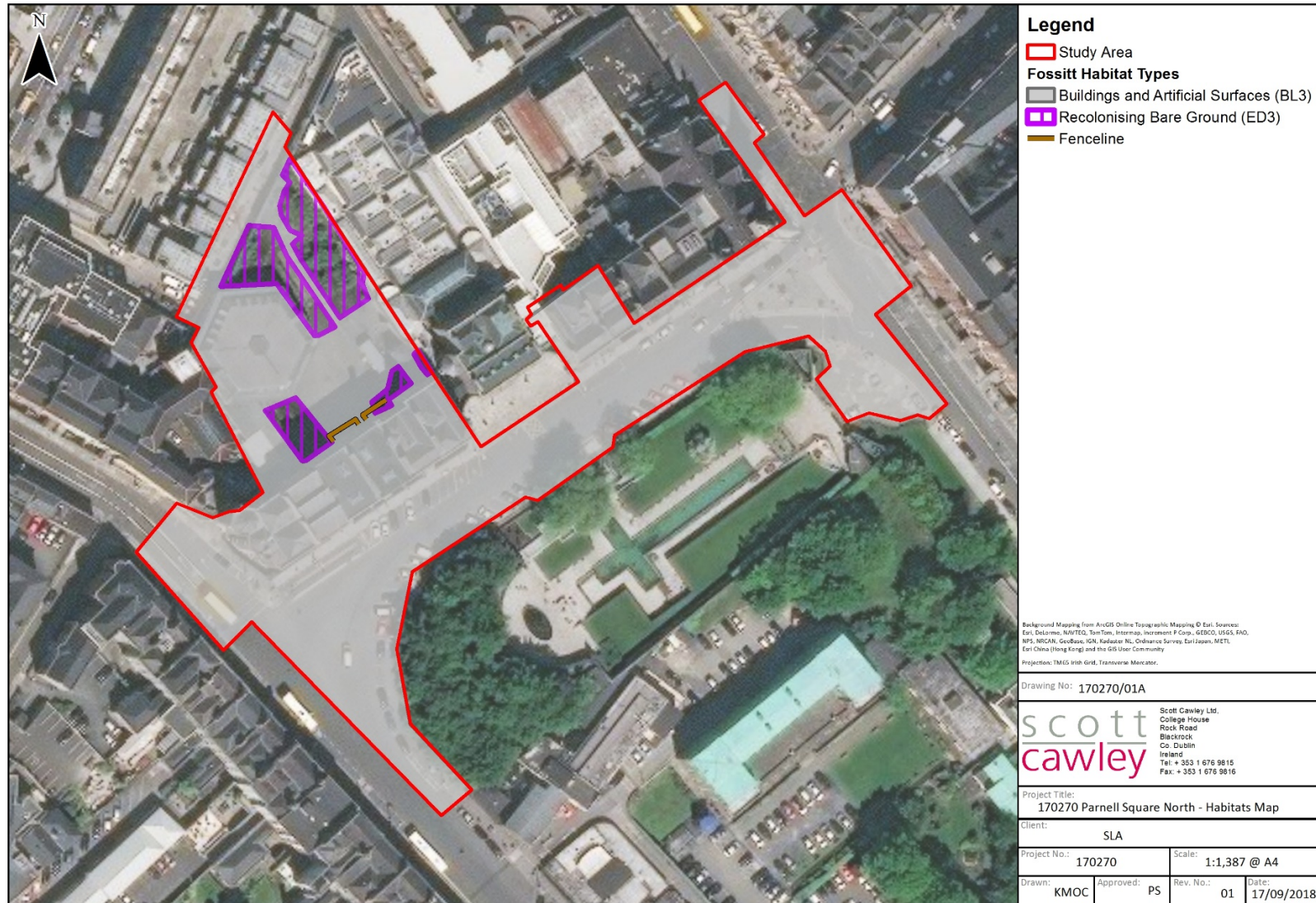


Figure 5.7.4: Map showing the habitat types identified within study area, which encompasses the proposed development site

Buildings and Artificial Surfaces (BL3)

The majority of the proposed development site consisted of this habitat type (i.e. c. 0.94ha in total area). It was primarily comprised of areas of hardstanding (see Figure 5.7.5 below), which include Parnell Square North, a small section of both Parnell Square West, Parnell Square East and Granary Row, a section of Bethesda Place, footpaths and a yard located to the rear to Georgian buildings No. 28 - 23. It also included various buildings such as: the former Coláiste Mhuire site (buildings No. 28-23), located west of The Hugh Lane Gallery; the former National Ballroom and Phoenix Magazine premises (buildings No. 22-21), located east of The Hugh Lane Gallery; and, a pre-fabricated structure located in the yard. There was very limited plant cover across this habitat type.



Figure 5.7.5: Buildings and Artificial Surfaces (BL3) habitat type located in the yard north of the Georgian buildings within the proposed development site. Photograph taken facing a northerly direction.

Recolonising Bare Ground (ED3)

There were some patches of this habitat type identified within the yard located north of the Georgian buildings (see Figure 5.7.6 below). Dominant plant species identified included butterfly-bush *Buddleja davidii*, red valerian *Centranthus ruber* and ragwort *Senecio jacobaea*. Frequent species included Canadian fleabane, nipplewort *Lapsana communis*, annual meadow-grass *Poa annua*, Yorkshire fog *Holcus lanatus*, white clover *Trifolium repens* and yellow clover *Trifolium dubium*. Occasionally occurring species included white stonecrop *Sedum album* and Willowherb species

Epilobium sp. Rarer species included a single sycamore *Acer pseudoplatanus* sapling.



Figure 5.7.6: Recolonising Bare Ground (ED3) habitat type located in the yard south of Bethesda Place within the proposed development site. Photograph taken facing a south-easterly direction.

Invasive Flora

No non-native plant species listed on the Third Schedule of the Birds and Habitats Regulations were identified within the proposed development site. The invasive species Butterfly-bush (*Buddleja davidii*) was identified within the yard located north of the Georgian buildings in close proximity of the northern boundary of the proposed development site.

This species is on the "Amber List" of recorded invasive species in Ireland³, which includes species that under certain ecological conditions may result in a significant impact on native species or habitats. In the case of the proposed development site and its surrounding environs, which are dominated by hardstanding, the presence of this species will not result in any significant ecological impact

³ According to Invasive Species Ireland website, which was accessed on the 14th August 2018 at <https://invasivespeciesireland.com/>.

5.7.3.4 Fauna

5.7.3.4.1 Desk Study Fauna Records

Amphibians

The following amphibian species have been recorded within 2km of the subject lands and are both considered to be of least concern.

- Smooth Newt *Lissotriton vulgaris* (record dated 2017)
- Common Frog *Rana temporaria* (record dates ranging from 2003 to 2017)

Smooth Newt are protected under the Wildlife Acts. Common Frog are protected under the Wildlife Acts and are listed on Annex V of the EU's Habitats Directive (1992).

Insects

The following species, for which records exist within 2km from the subject lands, are currently regarded as near threatened:

- Large red-tailed bumble bee *Bombus* (*Melanobombus*) *lapidarius* (dates ranging from 2014 to 2016)
- Moss carder-bee *Bombus* (*Thoracombus*) *muscorum* (records from 2013 to 2017)
- Megachile (*Delomegachile*) *willughbiella* (records from 1929 to 1977)
- Megachile (*Megachile*) *centuncularis* (records dated 1939 and 1977)

The following species, for which records exist within 2km from the subject lands, are currently regarded as vulnerable:

- Andrena (*Melandrena*) *nigroaenea* (records dated 2003 and 2008)
- Scarce blue-tailed damselfly *Ischura pumilio* (record dated 2017)

The following species, for which records exist within 2km from the subject lands, are currently regarded as endangered:

- Hill cuckoo bee *Bombus* (*Psithyrus*) *rupestris* (record dated 1952)
- Barbut's cuckoo bee *Bombus* (*Psithyrus*) *barbutellus* (record dated 1936)
- Great yellow bumble bee *Bombus* (*Subterraneobombus*) *distinguendus* (record dated 1943)
- Hylaeus (*Prosopsis*) *brevicornis* (record dated 2003)

Mammals

The following bat species are all found within 2km of the subject lands and area all considered to be of least concern.

- Leisler's bat *Nyctalus leisleri* (record dates ranging from 2005 to 2016)
- Common pipistrelle *Pipistrellus pipistrellus* (record dates ranging from 2000 to 2013)
- Soprano pipistrelle *Pipistrellus pygmaeus* (record dates ranging from 2006 to 2012)
- Nathusius's pipistrelle *Pipistrellus nathusii* (record dates ranging from 2007 to 2010)
- Whiskered bat *Myotis mystacinus* (record dated 2007)
- Daubenton's bat *Myotis daubentonii* (record dates ranging from 2008 to 2013)
- Brown long-eared bat *Plecotus auritus* (records dated 2007 and 2013)

These bat species are also all protected under the Wildlife Acts and the European Habitats Directive, where they are listed on Annex IV.

Bat roost records were obtained from Bat Conservation Ireland (BCI) on the 17th May 2018 for the proposed development site and environs to a distance of c. 10km. There were 48 records of bat roosts within 10km of the proposed development site, the nearest of which is located c. 2.2km to the south of the proposed development site.

There are records of otter *Lutra lutra* within 2km of the proposed development site. This species is protected under the Wildlife Acts and the European Habitats Directive where it is listed on Annex II and Annex IV. The conservation status of this species is currently regarded as being favourable (NPWS, 2013).

There are records of the following mammal species, which are protected under the Wildlife Acts, within 2km of the proposed development site:

- Badger *Meles meles* (recorded in Phoenix Park in 2014) - currently regarded as being of least concern;
- Red Squirrel *Sciurus vulgaris* (recorded in Trinity College Dublin in 2012) - currently regarded as near threatened; and,
- Eurasian pygmy shrew *Sorex minutus* (recorded by the Grand Canal in 2015) – currently regarded as being of least concern

Mammals (Bats)

Building Inspections

Seven of the eight Georgian buildings, located on Parnell Square North within the proposed development site, and the modern hexagon building, located south-east of Bethesda Place, were inspected for the presence of bats. Building No. 28, the rooftops of all eight buildings and some attic spaces were inaccessible due to health and safety reasons. All of these buildings were unoccupied and in a state of disrepair. Each of the three-storey Georgian buildings generally consisted of a flat roof, a red-brick façade to the front of the buildings and a stone walls to the rear (see Figure 5.7.7 below). No obvious external entry and exit points capable of being used by bats were noted in any of the buildings during the inspection; however it should be noted that this external inspection was completed from ground height and as such, it was possible such suitable features were missed.



Figure 5.7.7: Georgian buildings located north of Parnell Square North. Photograph taken facing a south-easterly direction.



Figure 5.7.8: Modern hexagon shaped building located south-east of Bethesda Place was considered not suitable for bats. Photograph taken facing a north-westerly direction.

The interior of each of the Georgian buildings generally consisted of a basement, a ground floor, first and second floor and attic space. The basements consisted of numerous dark, cool rooms, which contained some features suitable for bats to roost in such as exposed gaps between insulation boards and the wall and various chimneys with relatively high flues. There were also cellars located within the basement and also outside the cellars. The conditions within these cellars were considered suitable for bats to roost in (i.e. dark conditions and a constant, low temperature), although the cellars located outside the basements were more exposed to varying weather conditions.

There were numerous gaps and crevices in the walls of the cellars located outside the basement, which would be suitable for bats to roost in (see Figure 5.7.8 - 5.7.11 below). These gaps may be utilised as a temporary daytime or night-time roost.



Figure 5.7.9: Interior of chimney suitable for roosting bats, located in basement of Georgian building.



Figure 5.7.11: Cellars located outside basements with suitable gaps and crevices for bats to roost in.



Figure 5.7.10: Gaps between insulation boards and wall, located in basement of Georgian building.



Figure 5.7.12: Cellars located within the basement of Georgian building.

The majority of rooms within each of the Georgian buildings were brightly lit with large windows. On the upper floors of these buildings, there were numerous holes in the ceilings, which exposed attic spaces. There was a high level of disturbance from Feral Pigeons within the buildings (in particular No. 28-23) as evident from the presence of dead birds, bird droppings and feathers. This was especially the case in attic spaces that were accessible. There were a number of fire places and chimneys with high flues located within the Georgian buildings. In sections that were visible, the roof consisted of slate, which was either lined or unlined. There was no evidence of bat activity within any of the rooms within any of the Georgian buildings. See Figure 5.7.12 - 5.7.15 below.



Figure 5.7.13: Attic space of Georgian building with unlined slates, which contained a large proportion of bird droppings and a Feral Pigeon.



Figure 5.7.15: Example of a hole in the ceiling exposing limited section of attic space and bird droppings beneath.



Figure 5.7.14: Dead Feral Pigeon, located on the second floor of a Georgian building.



Figure 5.7.16: Example of brightly lit room in Georgian building.

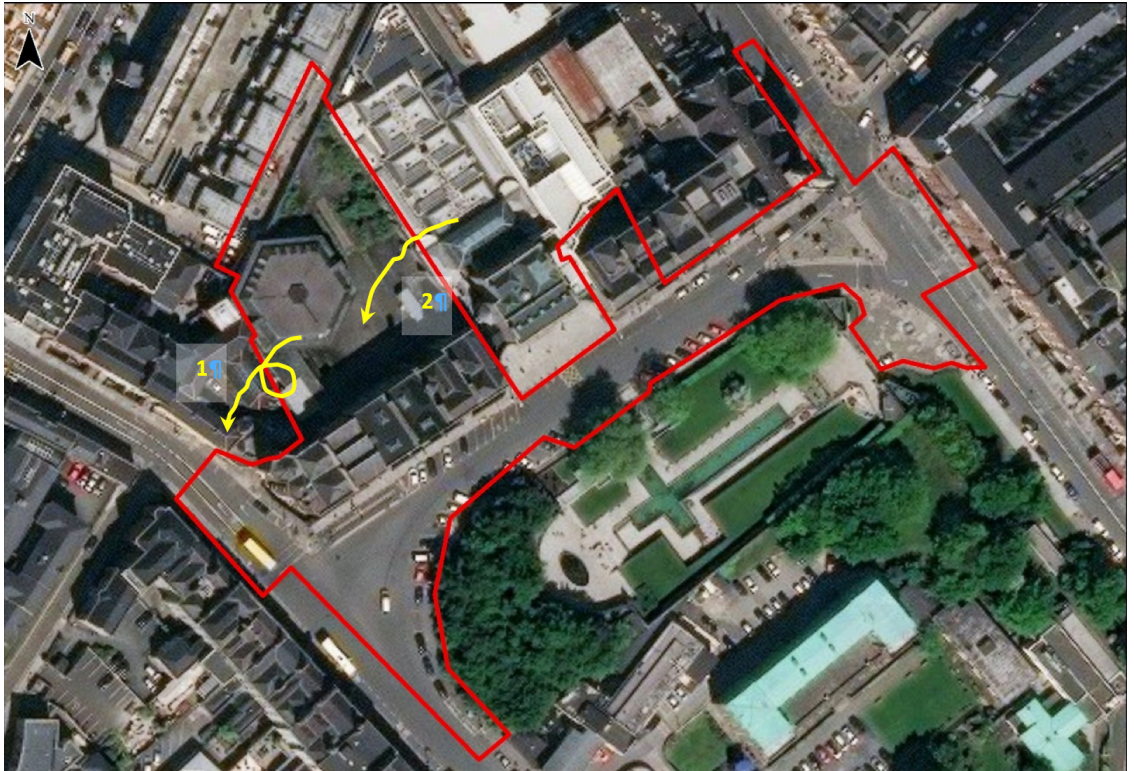
Dusk Survey Results from May 2018

The aim of the dusk survey was to identify the emergence of any bats from the buildings located within the proposed site and to record any bat activity across the proposed site (including commuting and foraging corridors). The front of the buildings located on Parnell Square North were brightly lit by street lighting. Weather conditions were considered suitable for surveying bats, as it was a dry, clear evening with a slight breeze and an average temperature of 10.5°C. No bats were recorded during the dusk survey.

Dusk and Dawn Survey and Static Bat Detector Results from August 2015

Weather conditions were considered suitable for surveying bats, as it was a dry, clear evening with a slight breeze and an average temperature of 12.5°C. During the start of the dusk survey (at 21:49), the level of illumination was measured at 120 lux at the entrance of building 25 on Parnell Square North, while towards the end of the survey (at 23:26) in the same location it was measured at 5 lux.

Only one bat was noted during the dusk survey (Label '1', see Figure 5.7.17 below for an illustration of bat activity recorded during both the dusk and dawn surveys). This bat was identified as a Common Pipistrelle bat (peak frequency 45.56 kHz) at 22:29, approximately 44 minutes after sunset. This bat was observed flying in a westerly direction between the modern building and the Georgian buildings. Only one bat was noted during the dawn survey (Label '2', Figure 5.7.17). This bat was identified as a Common Pipistrelle bat (peak frequency 44.68 kHz) and was recorded at 04:52, approximately 18 minutes before sunrise.



Source reference: Orthophotograph from ArcGIS World Imagery © Esri. Sources: Esri, Digital Globe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Figure 5.7.17: Flight patterns of Common Pipistrelle bat species, observed during the dusk and dawn surveys at Parnell Square North. Each number (or label) refers to bats described in the text above.

The Anabat bat detector recorded four bats, which were all identified as a Common Pipistrelle (peak frequency from of 44.32 - 45.96 kHz) and was recorded at approximately 22:27, 00:32, 00:45 and 04:51 respectively.

Mammals (Other)

There was no evidence of badger activity recorded within the proposed development site (*i.e.* setts, tracks, paths, latrines or feeding signs). There is no suitable habitat for badgers within the proposed development site. There was no water features within or in close proximity to the proposed development site and therefore no suitable habitat for otters.

Birds – Field Survey Results

All wild birds and their nests are protected under the Wildlife Acts. Conservation status in this paragraph follows that described in Birds of Conservation Concern in Ireland (Colhoun & Cummins, 2013) – Green (Low Concern), Amber (Medium Concern), and Red (High

Concern). There were no Birds Directive Annex 1 species recorded within site. During the dusk bat survey, Herring Gulls *Larus argentatus* (Red-listed) and Feral Pigeons *Columba livia domestica* (Green-listed) were noted nesting on the roofs of buildings 28 to 23 on Parnell Square North. During the building inspections, a number of Feral Pigeons were noted within the accessible attic spaces of some of the Georgian buildings. Likewise, a number of dead Feral Pigeons were noted within the rooms of the upper storeys of these Georgian buildings. There is limited suitable habitat for breeding birds within the proposed development site.

5.7.3.5 Summary of Key Ecological Features

The following ecological features are considered to be KERs in relation to the proposed development due to its urban context and its potential construction and/or operational impacts:

- Designated sites located downstream of the proposed development site in Dublin Bay that are potentially linked to the proposed development as a result of surface water runoff and foul effluent generated from the proposed development ultimately discharging to Dublin Bay;
- Whilst no bats were recorded entering and/or exiting any of the buildings during any of the bat surveys, a precautionary approach has been applied in consideration of:
 - Suitability of buildings as potential bat roosts (e.g. exposed gaps between insulation boards and the wall and various chimneys with relatively high flues and the presence of gaps and crevices in the walls of the cellars in the basement);
 - Inaccessibility of an entire building (i.e. building No. 28) and some areas of other buildings (i.e. some attic spaces) due to health and safety reasons; and,
 - As all bats and their roosts are protected under the Wildlife Acts and under the Habitats Directive.

Bats are only considered a KER only in the context of roosting bats, as there is no suitable habitat for foraging and/or commuting bats located within or in close proximity to the proposed development site.

- During the daytime and night-time surveys, herring gulls and feral pigeons were observed nesting on the rooftops of the Georgian buildings located within the proposed development site. Considering this and the fact that all breeding birds are protected under the Wildlife Acts, breeding birds have been identified as a KER. There is no other suitable breeding bird habitat located within the proposed development site.

Table 5.7.3: Summarises all ecological features identified as KERs based on the completion of the desk study and field survey of the subject lands. KERs have been identified as at risk of potentially significant impacts via a source-pathway-receptor link.

Habitat / Species	Highest Ecological Valuation Level	Key Ecological Receptor?
Designated Sites		
European Sites	International Importance	Yes
Other Designated Sites	National Importance	Yes
Protected Species		
Potential Foraging/Commuting Bats	Local Importance (Lower Value)	Yes
Potential Roosting Bats	Local Importance (Higher Value)	Yes
Nesting Birds	Local Importance (Higher Value)	Yes
Potential Badgers	Local Importance (Lower Value)	No
Potential Otters	Local Importance (Lower Value)	No
Potential Other Mammals (e.g. Red Squirrel)	Local Importance (Lower Value)	No
Potential Amphibians	Local Importance (Lower Value)	No
Habitats & Flora		
ED3 Recolonising and Bare Ground	Local Importance (Lower Value)	No
BL3 Buildings and Artificial Surfaces	Local Importance (Lower Value)	No
Other Fauna		
Invertebrates	Local Importance (Lower Value)	No
Small mammals (e.g. rats, mice)	Local Importance (Lower Value)	No

5.7.4 Characteristics of the Proposed Development

The proposed development of a new Dublin City Library and public realm works at Parnell Square North, Dublin 1, comprising in summary:

- The adaptive re-use of Nos. 20-21 & Nos. 23-28 Parnell Square North (all Protected Structures).
- The construction of a new 5-storey over basement extension, with roof gardens, for library and cultural use (c.5,720 sq m gross floor area, and associated demolition of existing 3-storey amharclann (theatre) building, single storey atrium and 2-storey return, to the rear of Nos. 23-28 Parnell Square North.
- Improvements to the public realm to facilitate a new public plaza, including reconfiguration of vehicular roadway (2-lane), parking and set down areas, street furniture, street art and public lighting, widening of footpaths, and relocation of Dublin Bikes Station, at Parnell Square North, in the area between Parnell Square West and East and the Garden of Remembrance.
- Modifications to Bethesda Place and Frederick Lane North to facilitate access by service and emergency vehicles to Frederick Lane North.

The overall site area measures c.0.99 ha, and includes Nos. 23 – 28 Parnell Square (Scoil Mhuire) and Nos. 20 – 21 Parnell Square (All Protected Structures). The Georgian houses are located either side of Hugh Lane Gallery (Protected Structure). The site is otherwise generally bounded by Parnell Square North, East & West, the Garden of Remembrance to the south, Bethesda Place, Frederick Lane North and the Sheridan Court Residential Apartments to the North.

Excavated material from the proposed development site will be assessed on-site and any contaminated materials identified will be correctly disposed of in accordance with international best practice guidelines and in compliance with relevant environmental legislation.

Surface water runoff generated from the existing Georgian houses 23-28 will be spilt with two thirds of the existing roof area, diverted and connected to the proposed new drainage system and attenuation tank prior to restricted discharge to the existing sewerage system located on Bethesda Place. The remaining one third of surface water runoff from the roof area and basement area will be discharged by gravity to the existing sewerage system on Parnell Square. Surface water run-off from the proposed Public Realm area in front of the proposed development on Parnell Square

North will discharge through new drainage channels and gully outlets to a new surface water sewer, which will discharge to the existing combined sewer located on Parnell Square North. SuDS features will be incorporated into the development, including an underground storm attenuation tank, greenroofs, rainwater butts and permeable paving.

The proposed development will have a Population Equivalent (P.E.) of 3,070 upon completion (i.e. 70 P.E. with respect to the library staff and 3,000 P.E. with respect to visitors per day to the library), and will be discharged to the existing sewerage system located on Bethesda Place. From there, it will be carried to Ringsend Wastewater Treatment Plant (WwTP), where it will be treated and then discharged into Dublin Bay.

5.7.5 Potential Impacts of the Proposed Development

As per the relevant guidelines, likely significant effects have only been assessed for KER, as listed in Figure 5.7.3. An impact is considered to be ecologically significant if it is predicted to affect the integrity or conservation status of a KER at a specified geographical scale. All impacts are described in the absence of mitigation.

5.7.5.1 Do Nothing Scenario

Under the do-nothing scenario, it is expected that the site would continue to offer suitable habitat for bats and nesting habitat for breeding birds.

5.7.5.2 Assessment of Effects on Designated Sites

It is our professional opinion that there will be **no likelihood of significant effects on any European sites** during the construction or operation of the proposed development, either alone or in-combination with other plans or projects.

Whilst there is some potential for contaminants generated during the construction phase of the proposed development to enter the downstream receiving environment, there is no possibility for significant effects on European sites in Dublin Bay for the following reasons:

- The likelihood of an accidental pollution event occurring during the construction phase of the proposed development is considered to be very low in light of the drainage on-site and location of the development;
- Any accidental pollution event is likely to be short in duration (i.e. confined to storm events), limiting the magnitude and extent of effects;
- The relatively short duration of the proposed works (i.e. a period of 24-36 months), which limits the potential period within which an accidental pollution incident could occur;
- The significant distance between the outfall of surface water runoff and the nearest European site in Dublin Bay (i.e. c. 2.3km), meaning that it is unlikely that sediments or pollutants from the proposed development are likely to result in any discernible effects on European sites in Dublin Bay; and,
- Enriched water entering Dublin bay has been shown to rapidly mix and become diluted such that the plume is often indistinguishable from the rest of the bay water (O'Higgins and Wilson, 2005).

Foul waters from the proposed development will be discharged to the existing sewerage system and carried to Ringsend WWTP for treatment prior to discharge into Dublin Bay. The proposed development is anticipated to result in an additional foul water loading value of 3,070 P.E . to Ringsend WWTP. Nonetheless, there is no possibility for significant effects due to the following reasons:

- There was no proven link between WWTP discharges and nutrient enrichment of sediments in Dublin Bay based on analyses of dissolved and particulate Nitrogen signatures (Wilson and Jackson, 2011);
- Enriched water entering Dublin Bay has been shown to rapidly mix and become diluted such that the plume is often indistinguishable from the rest of bay water (O'Higgins and Wilson, 2005);
- Marine modelling for Ringsend WWTP indicates that discharged effluent is rapidly mixed and dispersed to low levels via tidal mixing within a short distance of the outfall pipe (Dowly & Bedri 2007);
- Modelling of water quality in Dublin Bay for the Ringsend WWTP Upgrade Project demonstrates that the effects of nutrients from Ringsend WWTP are largely confined to the area between the South Wall and the Tolka Estuary (Irish Water, 2018); and,
- Despite the fact that Ringsend WWTP is currently operating above capacity and was non-compliant with several parameters as set under the EPA discharge licence, Dublin Bay as a whole is currently of "Unpolluted" water quality status (EPA, 2018).

The Provision of Information for Appropriate Assessment Screening report (Scott Cawley Ltd., 2018), which accompanies the planning application, for this proposed development has assessed the potential for likely significant effects on European Sites. It has identified that a number of European Sites that lie within the potential zone of influence of surface water discharges from the proposed development. However, following further consideration, no European Sites are deemed to be at risk of likely significant effects from construction or operation of the proposed development for the reasons stated above.

5.7.5.3 Demolition and Construction Phase

5.7.5.3.1 Assessment of Effects on Bats

No bats were recorded entering and/or exiting any of the buildings during any of the bat surveys. No bats were recorded during the 2018 dusk survey, while only two bats were recorded during the 2015 dusk and dawn surveys (*i.e.* a common pipistrelle recorded flying across the site in a westerly direction). No evidence of bats was encountered within any of the buildings that were accessible during the external and internal inspections undertaken in 2015; however some suitable features for bats to roost in were identified. Following a precautionary approach, the possibility of bats being encountered during the construction stage cannot be ruled out. In the absence of mitigation, the refurbishment works to these three buildings during the construction stage of the proposed development could result in the potential loss of a bat roost, if present, and as such, a significant impact on bats at a local scale. The size of this bat roost is likely to be relatively small, as no evidence of bats was recorded in any of the built structures located within the proposed development site and a limited number of bats were recorded within and adjacent to the site during activity surveys.

There is no suitable foraging and/or commuting habitat for bats located within or in close proximity to the proposed development site; therefore no impact on foraging and/or commuting bats is predicted.

5.7.5.3.2 Assessment of Effects on Birds

All birds are protected under the Wildlife Acts. If refurbishment works to the upper sections of the Georgian buildings and the attic spaces are carried out during the breeding bird season (*i.e.* from the 1st March to the 31st August), there is the potential for significant negative impacts to local breeding bird populations. However, outside of this period, the loss of or disturbance to potential nesting habitat (in this case the rooftops of the buildings) during the construction stage of the proposed development will probably result in a significant negative impact at the local level.

Noise, vibration and increased human presence associated with the construction and refurbishment works associated with the proposed development is likely to result in a temporary disturbance impact to local breeding birds. However, given that the site is urban in nature and is surrounded by commercial facilities, some residential properties and roads, birds on the proposed development site and in areas not directly impacted by construction works, both within the site boundary and adjacent areas, are likely to be habituated to

a degree to human and vehicle related disturbance and would not be expected to be impacted in any significant way by the construction of the proposed development.

5.7.5.4 Operational Phase

5.7.5.4.1 Assessment of Effects on Bats

The proposed development site is located in an urban area dominated by areas of hardstanding and occupied residential and commercial buildings. During each of the bat activity surveys, it was noted that the surrounding area was relatively brightly lit with on-street lighting and that there was a relatively high level of noise disturbance arising from human activity in the locality, such as vehicle traffic on Parnell Square North.

The proposed development will not result in a significant change in the existing baseline lighting and noise conditions at the proposed development site and its immediate surroundings. In consideration of this, as well as the absence of suitable commuting and/or foraging bat habitat in the locality and the results of the bats surveys, it is concluded that there is no potential for impacts on bats during the operational phase of the proposed development.

5.7.5.4.2 Assessment of Effects on Birds

Given that the bird species (i.e. Feral Pigeon and Herring Gull) expected to breed on the site are likely to be relatively common species found in suburban areas, it is considered extremely unlikely that operational phase of the proposed development would result in any perceptible negative impact on local breeding bird populations.

5.7.5.5 Assessment of Cumulative Effects

According to the Dublin City Development Plan 2016-2022 (DCC, 2016), the proposed development site are currently zoned as "Georgian conservation areas: to protect the existing architectural and civic design character, and to allow only for limited expansion consistent with the conservation objective". Surrounding lands are zoned as "Amenity/Open Space Lands/Green Network", "Sustainable residential neighbourhoods", "District Centres". 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. This applies to potential impacts on bats as a consequence of the combined loss of suitable roosting habitat in the locality and potential impacts on birds as a consequence of the combined loss of suitable nesting bird habitat in the locality. Given that it is

unlikely that there would be wide scale removal of suitable habitat in the surrounding locality, significant cumulative impacts are unlikely.

There is potential for cumulative effects of proposed plans and projects within the Dublin City Development Plan 2016-2022, Dún Laoghaire-Rathdown County Development Plan 2016-2022, Fingal Development Plan 2011-2017, and other county-level land use plans which can influence conditions in Dublin Bay via rivers and other surface water features. Nonetheless, no significant cumulative effects are predicted on designated sites within Dublin Bay on the following basis:

- There was no proven link between WWTP discharges and nutrient enrichment of sediments in Dublin Bay based on analyses of dissolved and particulate Nitrogen signatures (Wilson and Jackson, 2011);
- Enriched water entering Dublin Bay has been shown to rapidly mix and become diluted such that the plume is often indistinguishable from the rest of bay water (O'Higgins and Wilson, 2005);
- Marine modelling for Ringsend WWTP indicates that discharged effluent is rapidly mixed and dispersed to low levels via tidal mixing within a short distance of the outfall pipe (Dowly & Bedri 2007);
- Recent modelling of water quality in Dublin Bay for the Ringsend WWTP Upgrade Project demonstrates that the effects of nutrients from Ringsend WWTP are largely confined to the area between the South Wall and the Tolka Estuary (Irish Water, 2018); and,
- Despite the fact that Ringsend WWTP is currently operating above capacity and was non-compliant with several parameters as set under the EPA discharge licence, Dublin Bay as a whole is currently of "Unpolluted" water quality status (EPA, 2018).

5.7.6 Mitigation Measures

All of the mitigation measures described in this section are in accordance with current best practice guidance, as detailed in Volume 2, Appendix 5.7.1.

Mitigation measures are proposed in relation to those key ecological receptors where the potential impact significance can be further reduced by their implementation.

5.7.6.1 Mitigation During Demolition and Construction Phase

5.7.6.1.1 Measures to Reduce Impacts on Bats

The likelihood of bats utilising the buildings for roosting within the subject lands is deemed to be low as no evidence of bats was noted during the external or internal building inspections and no bats were recorded exiting or entering the buildings during the activity surveys. However as the buildings are considered to contain some features that are suitable for roosting bats, the possibility of bats being encountered during the construction phase cannot be ruled out.

In order to mitigate any potential impact on local bat populations, it is recommended that if bats are encountered during works undertaken within the buildings, the relevant activity will be suspended until the advice of a suitably qualified and licenced bat ecologist is sought. A derogation licence may need to be sought from NPWS in order to permit removal of bats and mitigate for the loss of any roosts on the site.

The demolition of all other buildings located within the proposed development site will not result in any impact on bats in the locality, as these buildings are considered to be not suitable for roosting bats.

5.7.6.1.2 Measures to Reduce Impacts on Birds

To limit the potential impact of construction on breeding birds, the refurbishment and associated works of the attic spaces and rooftops should take place in the non-breeding season (September to February, inclusive), where possible.

As the nests of all bird species are protected under the Wildlife Acts and there are a number of bird species likely to breed within the boundary of the proposed development site in those areas where vegetation will be cleared, a licence will be required from the NPWS to permit the destruction of nest sites and disturbance to breeding birds during the bird breeding season (i.e. 1st March to the 31st August).

5.7.6.2 Mitigation During Operational Phase

No operational impacts are predicted and therefore, no mitigation measures are required.

5.7.7 Predicted Impact of the Proposed Development

5.7.7.1 Demolition and Construction Phase

Following implementation of mitigation measures, **no significant residual impacts** are anticipated during the construction phase of the proposed development.

5.7.7.2 Operational Phase

Following implementation of mitigation measures, **no significant residual impacts** are anticipated during the operational phase of the proposed development.

5.7.7.3 Interactions

There are interactions between hydrology and biodiversity with respect to the potential impact of water pollution on designated sites during construction and operation; however, there is no potential for significant effects to arise for the reasons outlined in Section 5.7.5.2 above. There are also potential interactions between noise and vibration and biodiversity with respect to the potential impact of a temporary increase in noise and vibration levels on birds during the demolition and construction phase of the proposed development; however, no potential significant impacts will arise for the reasons outlined in Section 5.7.5.3 above.

5.7.8 Monitoring

No monitoring is proposed.

5.7.9 Difficulties Encountered

Difficulties encountered as part of this ecological impact assessment are described in Section 5.7.2.3.3 "Limitations of Field Surveys / Data Deficiencies" above. No other difficulties or limitations were encountered during this assessment.

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