

Ecological Impact Statement for a proposed residential development at St. Kevin's Hospital, Cork

Compiled by OPENFIELD Ecological Services

Pádraic Fogarty, MSc MIEMA

For The Land Development Agency



www.openfield.ie

December 2020

1 INTRODUCTION

This Ecological Impact Statement has been prepared by Pádraic Fogarty of OPENFIELD Ecological Services. Pádraic Fogarty has worked for 25 years in the environmental field and in 2007 was awarded an MSc from Sligo Institute of Technology for research into Ecological Impact Assessment (EclA) in Ireland. OPENFIELD is a full member of the Institute of Environmental Management and Assessment (IEMA).

2 STUDY METHODOLOGY

The assessment was carried out in accordance with the following best practice methodology: 'Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland' by the Institute of Ecology and Environmental Management (IEEM, 2016).

Site visits were carried out on the 25th of November 2019 and the 25th of May 2020 in fair weather. The site was surveyed in accordance with the Heritage Council's Best Practice Guidance for Habitat Survey and Mapping (Smith et al., 2010). Habitats were identified in accordance with Fossitt's Guide to Habitats in Ireland (Fossitt, 2000).

The nomenclature for vascular plants is taken from *The New Flora of the British Isles* (Stace, 2010) and for mosses and liverworts *A Checklist and Census Catalogue of British and Irish Bryophytes* (Hill et al., 2009).

May lies within the optimal survey period for general habitat surveys (Smith et al., 2010) and so it was possible to classify all habitats on the site to Fossitt level 3. May lies within the optimal period for breeding birds and amphibians and a nesting survey was carried out. November is optimal for surveying large mammals (especially Badgers).

3 EXISTING RECEIVING ENVIRONMENT

3.1 Zone of Influence

Best practice guidance suggests that an initial zone of influence be set at a radius of 2km for non-linear projects (IEA, 1995). However, some impacts are not limited to this distance and so sensitive receptors further from the project footprint may need to be considered as this assessment progresses. This is shown in figure 1.

There are a number of designations for nature conservation in Ireland including National Park, National Nature Reserve, RAMSAR site, UNESCO Biosphere reserves, Special Protection Areas (SPA – Birds Directive), Special Areas of Conservation (SAC – Habitats Directive); and Natural Heritage Areas. The mechanism for these designations is through national or international legislation. Proposed NHAs (pNHA) are areas that have yet to gain full legislative protection. They are generally protected through the relevant County Development

Plan. There is no system in Ireland for the designation of sites at a local, or county level. The following areas were found to be located within the zone of influence of the application site:

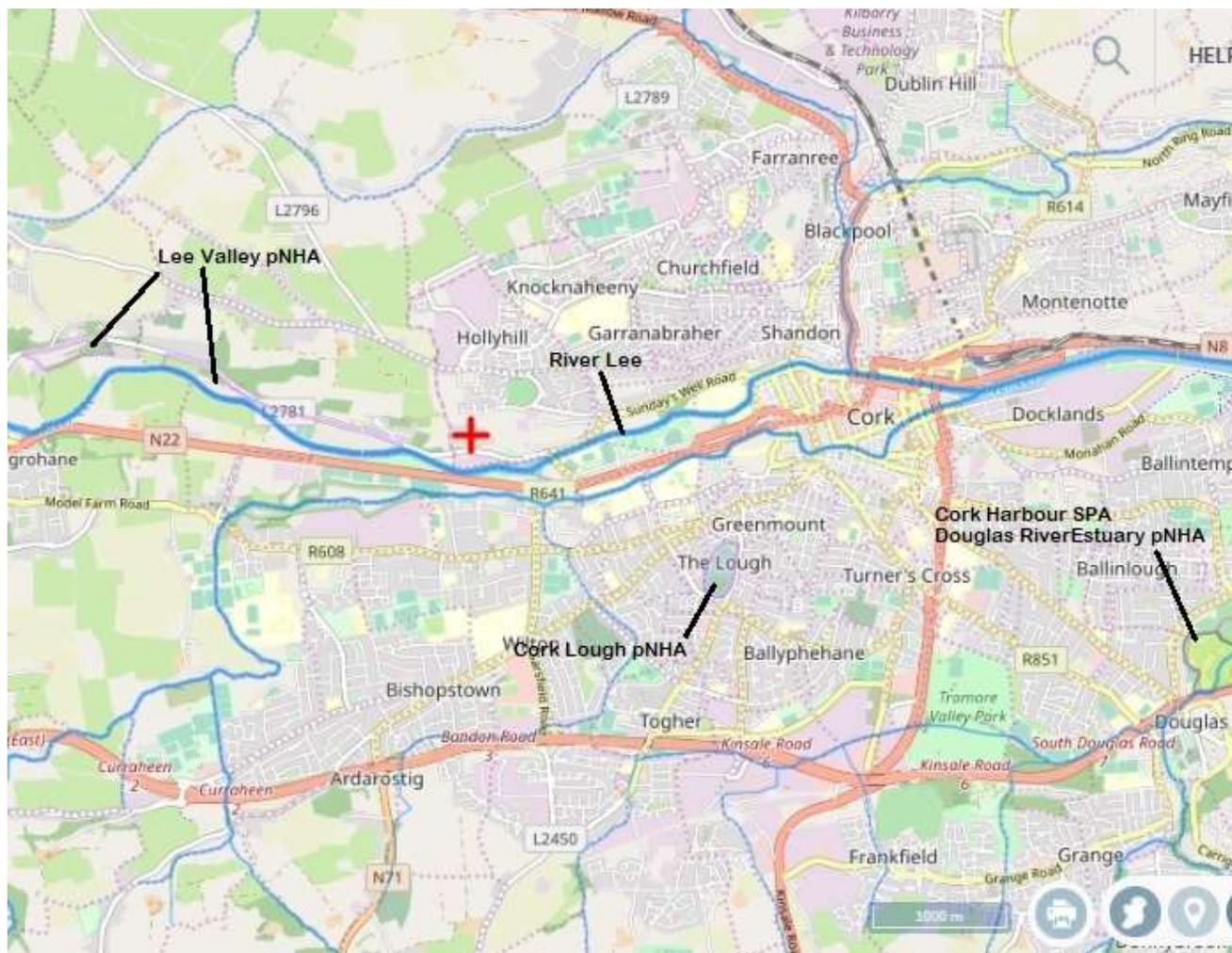


Figure 1 – Site location (red cross) showing local water courses and areas designated for nature conservation (from www.epa.ie).

Lee Valley pNHA (site code: 0094). According to the NPWS: “This site occupies five separate sections of the valley of the River Lee, immediately to the west of Cork City. One section passes close to Ballincollig, and the Ballincollig Regional Park makes up a portion of the site”. It includes a diverse range of semi-natural habitats including wet broadleaved woodland, wet grassland, dry broadleaved woodland, unimproved dry grassland, freshwater marsh. The site is also important for a number of wetland bird species and butterflies (NPWS, 1999).

Cork Lough (site code: 1081). The NPWS provides the following information on this site:

“This small lake is situated in the north-west of Cork City, 1km. north of the River Lee.

In 1972 An Foras Forbartha noted it as an important place to observe wildfowl and gulls due to its close proximity to a large human population. It appears, however, that high numbers of birds, attracted by bread-feeding, are

causing severe eutrophication which is in need of remedial action. Also, exotic fish have been released over the years. In spite of these factors the lake regularly holds over 100 Mute Seans, a feral flock of over 30 Canada Geese and small numbers (usually under 50) of Mallard, Teal, Tufted Duck and Coot. An increasing flock of wintering Lesser Black-backed Gulls also occurs (460+ in January 1995).

The site is a N.H.A. of local important for its bird community." (NPWS, 1995)

Cork Harbour SPA (site code: 4030)

The estuaries of the Lee, along with other rivers flowing into Cork Harbour provide a source of nutrients that promotes considerable productivity on surfaces that are exposed at low tide. This in turn provides a food source and place of shelter for bird populations, both resident and overwintering flocks. SPAs are designated for their internationally important species (listed on Annex I of the Birds Directive) or population sizes (>1% of the global population or >20,000 individuals). Most recent available data indicate that a mean of 25,125 birds utilised the area during the winters from 2006-11 (Crowe et al., 2012). This includes internationally important numbers of Black-tailed godwit *Limosa limosa* and nationally important numbers Shelduck *Tadorna tadorna*, Wigeon *Anas penelope*, Teal *A. crecca*, Mallard *A. platyrhynchos*, Shoveler *Anas clypeata*, Red-breasted Merganser *Mergus serrator*, Little Grebe *Tachybaptus ruficollis*, Great-crested Grebe *Podiceps cristatus*, Cormorant *Phalacrocorax carbo*, Oystercatcher *Haematopus ostralegus*, Golden plover *Pluvialis apricaria*, Lapwing *Vanellus vanellus*, Dunlin *Charadrius alpina*, Bar-tailed godwit *L. lapponica*, Curlew *Numenius arquata*, Greenshank *Tringa nebularia* Redshank *T. totanus*, and Turnstone *Arenaria interpres*.

Table 2 – Features of interest for the Cork Harbour SPA

Species		Status ¹
Pintail	<i>Anas acuta</i>	Red (Wintering)
Shoveler	<i>Anas clypeata</i>	Red (Wintering)
Golden plover	<i>Pluvialis apricaria</i>	Red (Breeding & Wintering)
Grey Plover	<i>Pluvialis squatarola</i>	Amber (Wintering)
Lapwing	<i>Vanellus vanellus</i>	Red (Breeding & Wintering)
Dunlin	<i>Calidris alpina</i>	Red (Breeding & Wintering)
Bar-tailed Godwit	<i>Limosa lapponica</i>	Amber (Wintering)
Black-tailed Godwit	<i>Limosa limosa</i>	Amber (Wintering)
Redshank	<i>Tringa totanus</i>	Red (Breeding & Wintering)
Black-headed Gull	<i>Croicocephalus ridibundus</i>	Red (Breeding)
Common Gull	<i>Laurus canus</i>	Amber (Breeding)
Lesser Black-backed Gull	<i>L. fuscus</i>	Amber (Breeding)
Shelduck	<i>Tadorna tadorna</i>	Amber (Breeding & Wintering)
Wigeon	<i>Anas penelope</i>	Red (Wintering)
Teal	<i>Anas crecca</i>	Amber (Breeding & Wintering)

¹ Colhoun & Cummins, 2013. *Birds of Conservation Concern in Ireland 2014-2019*

Cormorant	<i>Phalacrocorax carbo</i>	Amber (Breeding & Wintering)
Great-crested Grebe	<i>Podiceps cristatus</i>	Amber (Breeding & Wintering)
Little Grebe	<i>Tachybaptus ruficollis</i>	Amber (Breeding & Wintering)
Grey Heron	<i>Ardea cinerea</i>	Green (Breeding & Wintering)
Curlew	<i>Numenius arquata</i>	Red (Breeding & Wintering)
Red-breasted Merganser	<i>Mergus serrator</i>	Green (Breeding & Wintering)
Oystercatcher	<i>Haematopus ostralegus</i>	Amber (Breeding & Wintering)
Wetlands & Waterbirds		

- **Pintail.** Dabbling duck wintering on grazing marshes, river floodplains, sheltered coasts and estuaries. It is a localised species and has suffered a small decline in distribution in Ireland for unknown reasons.
- **Teal.** In winter this duck is widespread throughout the country. Land use change and drainage however have contributed to a massive decline in its breeding range over the past 40 years.
- **Wigeon.** There is a small unconfirmed breeding population of this duck in Ireland but the bulk of the population arrives to winter in coastal and inland wetlands. Changes in its wintering population have been attributed to climate change.
- **Grey Heron.** A distinctive birds of coastal and inland wetlands Heron numbers have rise substantially in recent decades.
- **Dunlin.** Although widespread and stable in number during the winter season, the Irish breeding population has collapsed by nearly 70% in 40 years. Breeding is now confined to just seven sites in the north and west as habitat in former nesting areas has been degraded.
- **Black-headed Gull.** Widespread and abundant in winter these gulls are nevertheless considered to be in decline. The reasons behind this are unclear but may relate to the loss of safe nesting sites, drainage, food depletion and increase predation.
- **Oystercatcher.** Predominantly coastal in habit Oystercatchers are resident birds whose numbers continue to expand in Ireland.
- **Common Gull.** Breeding sites for this gull in Ireland are confined to coastal locations, and mostly in the north and west. Their population is boosted by winter arrivals but again, there is a distinct coastal bias in their distribution.
- **Lesser Black-backed Gull.** The wintering range of this distinctive gull has expanded in Ireland by 55% since the early 1980s while breeding colonies have similarly increased.
- **Bar-tailed Godwit.** These wetland wading birds do not breed in Ireland but are found throughout the littoral zone during winter months. They prefer estuaries where there are areas of soft mud and sediments on which to feed.
- **Black-tailed Godwit.** Breeding in Iceland these waders winter in selected sites around the Irish coast, but predominantly to the east and southern halves. Their range here has increase substantially of late.
- **Red-breasted Merganser.** A widely distributed duck in winter Red-breasted Mergansers also breed in Ireland at certain coastal and inland locations to the north and west. They have suffered small declines in both their wintering and breeding ranges and possible reasons have been cited as predation by American Mink and shooting.

- **Curlew.** Still a common sight during winter at coastal and inland areas around the country its breeding population here has effectively collapsed. Their habitat has been affected by the destruction of peat bogs, afforestation, farmland intensification and land abandonment. Their wintering distribution also appears to be in decline.
- **Cormorant.** Wintering populations of this large, fish-eating bird have increased in Ireland since the early 1980s. Breeding also occurs widely along the coast and inland waterways. It is amber-listed due to a moderate decline in numbers.
- **Golden Plover.** In winter these birds are recorded across the midlands and coastal regions. They breed only in suitable upland habitat in the north-west. Wintering abundance in Ireland has changed little in recent years although it is estimated that half of its breeding range has been lost in the last 40 years.
- **Grey Plover.** These birds do not breed in Ireland but winter throughout coastal estuaries and wetlands. Its population and distribution is considered to be stable.
- **Great-crested Grebe.** These birds breed predominantly on freshwater sites north of the River Shannon while coastal areas along the east and south are used for wintering. Numbers in Ireland have declined by over 30% since the 1990s.
- **Little Grebe.** A small, diving bird that frequents freshwater and coastal wetlands throughout the country. Numbers are believed to be increasing.
- **Shelduck.** The largest of our ducks, Shelduck both breed and winter around the coasts with some isolated stations inland. Its population and range is considered stable.
- **Redshank.** Once common breeders throughout the peatlands and wet grasslands of the midlands Redshanks have undergone a 55% decline in distribution in the past 40 years. Agricultural intensification, drainage of wetlands and predation are the chief drivers of this change.
- **Lapwing.** Although still one of the most widespread of the breeding waders Lapwing populations have declined by over 50% in the past 40 years. This has been driven by changes in agricultural practices and possibly increased predation.

The National Biodiversity Data Centre website (www.biodiversity.ie) contains a mapping tool that indicates records of legally protected species within a selected Ordnance Survey (OS) 10km grid square. The St. Kevin's Hospital site is located within the square W67 and two species of protected plant are highlighted. These are listed on the Flora Protection Order 2015 and are both mosses: Glass-wort Feather-moss *Scleropodium tourettii* and Many-seasoned Thread-moss *Bryum intermedium*. Both of these records date from 1800s.

It must be noted that this list cannot be seen as exhaustive as suitable habitat may be available for other important and protected species. In summary, it can be seen that of the two species none remains current according to the Botanical Society of the British Isles.

Water quality data are available from the Environmental Protection Agency (EPA) and water bodies are assessed under the EU's Water Framework Directive (WFD). The waters in the tidal and freshwater portions of the River Lee are assessed as 'moderate' under the 2013-2018 reporting period. This indicates 'unsatisfactory'

status in these water bodies, largely due to excessive nutrient input. The main wastewater treatment plant for Cork is located on Little Island and in this vicinity water quality is also 'moderate'. Coastal water in the harbour (beyond Fort Davis) meanwhile is 'good status'.

3.2 Stakeholder Consultation

Because of the low ecological sensitivity of the subject lands, third party observations were not sought.

3.3 Site Survey

The proposed development site is associated with the grounds of St. Kevin's Hospital which was constructed in the 1800s but which has fallen into disuse.

3.4.1 Flora

The lands are a combination of modified habitats including **buildings and artificial surfaces – BL3** which covers extensive areas of the site. These are surrounded by expanses of **dry meadow – GS2** which is grazed by horses. There is Ragwort *Senecio jacobaea*, Nettle *Urtica dioica* and grasses. Lines of **stone walls – BL1** are associated with Ivy *Hedera helix*, Red Valerian *Centranthus ruber*, Common Polypody *Polypodium vulgare* and Traveller's-joy *Clematis vitalba*. There are areas of **recolonising bare ground – ED3** with Canadian Fleabane *Conyza canadensis*, Butterfly-bush *Buddleja davidii*, Weld *Reseda lutea*, and Teasel *Dipsacus folonum*.

Scattered trees can be found throughout and include specimens of Ash *Fraxinus excelsior*, Sycamore *Acer pseudoplatanus*, Scots Pine *Pinus sylvestris* and Apple *Malus sylvestris*. To the north of the site, on a steep embankment, there is a small patch of **broadleaved woodland – WD1**. This is mostly Sycamore and Ivy with some Hawthorn *Crataegus monogyna*, Gorse *Ulex europaeus*, Brambles *Rubus fruticosus agg.*, Honeysuckle *Lonicera periclymenum* and at least one Oak *Quercus sp.*

There are no water courses on, or immediately adjacent to the site boundary.

In a number of locations there are stands of Japanese Knotweed *Fallopia japonica* (which is an alien invasive species). One of these is large. Spanish Bluebell *Hyacinthoides hispanica* and Three-cornered Garlic *Allium triquetrum* were also noted during site assessments carried out by Invasive Plant Solutions. These plants are listed in SI No. 477 of 2011 as alien invasive.

There are no habitats which are examples of those listed in Annex II of the Habitats Directive and no habitat suitable for protected species of plants.

3.4.2 Fauna

The site survey included incidental sightings or proxy signs (prints, scats etc.) of faunal activity, while the presence of certain species can be concluded where there is suitable habitat within the known range of that species. Table 4 details those mammals that are protected under national or international legislation in Ireland. Cells are greyed out where suitable habitat is not present or species are outside the range of the study area.

Table 4 – Protected mammals in Ireland and their known status within the W67 10km grid square². Those that are greyed out indicate either that there are no records of the species from the National Biodiversity Data Centre. Since the site is not coastal the two Seal species are greyed out.

Species	Level of Protection	Habitat ³
Otter <i>Lutra lutra</i>	Annex II & IV Habitats Directive; Wildlife (Amendment) Act, 2000	Rivers and wetlands
Lesser horseshoe bat <i>Rhinolophus hipposideros</i>		Disused, undisturbed old buildings, caves and mines
Grey seal <i>Halichoerus grypus</i>	Annex II & V Habitats Directive; Wildlife (Amendment) Act, 2000	Coastal habitats
Common seal <i>Phocaena phocaena</i>		
Whiskered bat <i>Myotis mystacinus</i>	Annex IV Habitats Directive; Wildlife (Amendment) Act, 2000	Gardens, parks and riparian habitats
Natterer's bat <i>Myotis nattereri</i>		Woodland
Leisler's bat <i>Nyctalus leisleri</i>		Open areas roosting in attics
Brown long-eared bat <i>Plecotus auritus</i>		Woodland
Common pipistrelle <i>Pipistrellus pipistrellus</i>		Farmland, woodland and urban areas
Soprano pipistrelle <i>Pipistrellus pygmaeus</i>		Rivers, lakes & riparian woodland
Daubenton's bat <i>Myotis daubentoniid</i>		Woodlands and bridges associated with open water
Nathusius' pipistrelle <i>Pipistrellus nathusii</i>		Parkland, mixed and pine forests, riparian habitats
Irish hare <i>Lepus timidus hibernicus</i>		Annex V Habitats Directive; Wildlife (Amendment) Act, 2000
Pine Marten <i>Martes martes</i>	Broad-leaved and coniferous forest	

² From the National Biodiversity Data Centre, excludes marine cetaceans

³ Harris & Yalden, 2008

Hedgehog <i>Erinaceus europaeus</i>	Wildlife (Amendment) Act, 2000	Woodlands and hedgerows
Pygmy shrew <i>Sorex minutus</i>		Woodlands, heathland, and wetlands
Red squirrel <i>Sciurus vulgaris</i>		Woodlands
Irish stoat <i>Mustela erminea hibernica</i>		Wide range of habitats
Badger <i>Meles meles</i>		Farmland, woodland and urban areas
Red deer <i>Cervus elaphus</i>		Woodland and open moorland
Fallow deer <i>Dama dama</i>		Mixed woodland but feeding in open habitat
Sika deer <i>Cervus nippon</i>		Coniferous woodland and adjacent heaths

No direct evidence of any mammal activity was recorded. There is no evidence that Badger use the site and no sett is present. Records from the National Biodiversity Data Centre do not indicate Badger activity in this area.

There was no evidence that Irish Hare is present while habitat is considered too isolated from other woodland areas to support Deer, Pine Marten or Red Squirrel. Small mammals such as the Irish Stoat, Hedgehog and Pygmy Shrew are considered more or less ubiquitous in the Irish countryside, including on land in suburban areas (Lysaght & Marnell, 2016). While Rabbits *Oryctolagus cuniculus* and Fox *Vulpes vulpes* are common in Cork along with Brown Rat *Rattus norvegicus*, House Mouse *Mus domesticus* and Field Mouse *Apodemus sylvaticus*, these species are not protected.

Buildings on the site are suitable for roosting bats although there is limited vegetation in the surrounding areas which may provide resources for foraging (Hundt, 2012). A bat survey was undertaken by Wildlife Surveys Ireland and this report is presented in full separately. Surveys were undertaken on a number of dates in May and August 2020. The following headline conclusions are taken from the report:

Roosting:

Common pipistrelle -*Pipistrellus pipistrellus* – Five roosts were located -One roost was in the hill house stonework, one roost was in the front of the hospital building in stonework, one in the first alcove of the hospital building and one roost was in the yard behind the red brick building. There is also the probability of a roost within the hospital building with a common pipistrelle seen flying within the building along the third floor.

Leisler's bat – *Nyctalus Leisleri* – Two roosts were found with three possible roosts -One roost was in the chimney of the hospital. One roost was in the back of the red bricked building. One possible roost is in the hill

house fascia, and a second possible roost is in the eaves of the church. Leisler's bats were also seen swarming at the fascia at the back of the courtyard. This is also a possible roost area.

Soprano pipistrelle – Four roosts were found -One roost is in the chimney of hill house, one roost is at the apex of the red brick building (north), one roost is at the chimney of the red brick house, and one roost is at the rear of the hospital building.

All roosts were of individuals or up to three bats with no large maternity roosts found.

Four species were also recorded foraging on the lands.

A breeding bird survey was carried out in May 2020 and the following species were noted: Wood Pigeon *Columba palumbus*, Magpie *Pica pica*, Blue Tit *Parus caeruleus*, Jackdaw *Corvus monedula*, Feral Pigeon *C. livia* and Wren *Troglodytes troglodytes*. These species are of low conservation concern/green list (Colhoun & Cummins, 2013). Suitable nesting habitat is available for common garden birds in small patches of Brambles and Ivy as well as in large buildings.

During the November survey the following birds were noted: Wood Pigeon, Hooded Crow *Corvus corone*, Magpie, Feral Pigeon and Jackdaw. The lands are not suitable for wintering wetland or wading birds associated with coastal inlets and estuaries.

There is no suitable habitat for breeding Common Frog *Rana temporaria* or Smooth Newt *Lissotriton vulgaris* as there are no wetlands. There are no habitats on the site suitable for fish. The River Lee is of fisheries value and is suitable for migratory fish such as salmonids, European Eel *Anguilla Anguilla* and Lamprey *Lampetra sp.* species.

Most habitats, even highly altered ones, are likely to harbour a wide diversity of invertebrates. In Ireland only one insect is protected by law, the Marsh Fritillary butterfly *Euphydryas aurinia*, and this is not to be found in this area. Other protected invertebrates are confined rare to freshwater and wetland habitats which are not present on this site.

3.5 Overall Evaluation of the Context, Character, Significance and Sensitivity of the Proposed Development Site

In summary, it has been seen that the application site is composed of highly modified habitats within a built-up area. There are no examples of habitats listed on Annex I of the Habitats Directive or records of rare or protected plants. There are a number of stands of Japanese Knotweed, Spanish Bluebells and Three-cornered Garlic, species listed as alien invasive as per SI 477 of 2011.

Significance criteria are available from guidance published by the National Roads Authority (NRA, 2009). These are reproduced in table 5. From this an evaluation of the various habitats and ecological features on the site has been made and this is shown in table 6.



Figure 2 – Development boundary of the subject lands superimposed on an aerial photograph and showing habitats the locations of the stands of Japanese Knotweed (photo from www.google.com)

Table 5 Site evaluation scheme taken from NRA guidance 2009

Site Rating	Qualifying criteria
A - International importance	<p>SAC, SPA or site qualifying as such. Sites containing 'best examples' of Annex I priority habitats (Habitats Directive).</p> <p>Resident or regularly occurring populations of species listed under Annex II (Habitats Directive); Annex I (Birds Directive); the Bonn or Berne Conventions.</p> <p>RAMSAR site; UNESCO biosphere reserve;</p> <p>Designated Salmonid water</p>

<p>B - National importance</p>	<p>NHA. Statutory Nature Reserves. Refuge for Flora and Fauna. National Park.</p> <p>Resident or regularly occurring populations of species listed in the Wildlife Act or Red Data List</p> <p>'Viable' examples of habitats listed in Annex I of the Habitats Directive</p>
<p>C - County importance</p>	<p>Area of Special Amenity, Tree Protection Orders, high amenity (designated under a County Development Plan)</p> <p>Resident or regularly occurring populations (important at a county level, defined as >1% of the county population) of European, Wildlife Act or Red Data Book species</p> <p>Sites containing semi-natural habitat types with high biodiversity in a county context, and a high degree of naturalness, or populations of species that are uncommon in the county</p>
<p>D - Local importance, higher value</p>	<p>Sites containing semi-natural habitat types with high biodiversity in a county context, and a high degree of naturalness, or populations of species that are uncommon in the locality</p> <p>Sites or features containing common or lower value habitats, including naturalised species that are nevertheless essential in maintaining links and ecological corridors between features of higher ecological value.</p>
<p>E - Local importance, lower value</p>	<p>Sites containing small areas of semi-natural habitat that are of some local importance for wildlife;</p> <p>Sites or features containing non-native species that are of some importance in maintaining habitat links.</p>

Table 6 Evaluation of the importance of habitats and species on the St. Kevin's Hospital site

<p>Dry meadow - GS2</p> <p>Broadleaved woodland – WD1</p> <p>Stone walls – BL1</p>	<p>Low local ecological value</p>
<p>Buildings and artificial surfaces – BL3</p> <p>Recolonising bare ground – ED3</p>	<p>Negligible ecological value</p>

4 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

This significant regeneration project is strategic housing development that consists of 266 dwellings on the former Institutional lands of St. Kevin's Hospital in Shanakiel, Cork.

The Land Development Agency intend to apply to An Bord Pleanála (the Board) for permission for a Strategic Housing Development with a total application site area of c. 5.7 ha, on lands located at the Former St. Kevin's Hospital and Grounds, Shanakiel, Cork (A Protected Structure, 'Our Lady's Hospital' RPS Ref. PS620). The development, with a total gross floor area of c 24,344 sq m, will provide 266 no. residential units, a crèche and office enterprise centre. The development will consist of 46 no. town houses (32 no. 3 bedroom units and 14 no. 4 bedroom units) arranged in 11 no. two storey blocks; 54 no. ground floor 2 bedroom duplex apartments and 36 no. 3 bedroom and 18 no. 4 bedroom duplex townhouses above arranged in 7 no. three storey blocks and 52 no. walk-up apartments (11 no. 1 bedroom apartments and 41 no. 2 bedroom apartments) arranged in 3 no. four storey blocks. The development will also include the stabilisation, conversion, renovation and internal reordering (including new structural frame and floors) of the former St. Kevin's Hospital building to provide 60 no. apartments (26 no. 1 bedroom and 34 no. 2 bedroom apartments) a 440 sq m crèche at ground floor level, with ancillary outdoor play area and the conversion of the 630 sq m former chapel building to provide a new Office Enterprise Centre. The proposed development will include 241 no. surface car parking spaces and 563 no. bicycle parking spaces.

The development will also consist of the demolition of 2,901 sq m of former hospital buildings and associated outbuildings (including the demolition of the 1,129 sq m former two storey St. Dymphna's Hospital block; 672 sqm of the rear toilet blocks and contemporary stair cores to the side and rear of the St. Kevin's Hospital building; the 220 sq m two storey former Doctors House; the 50 sq m one storey hospital mortuary building; 480 sq m of shed buildings to the rear of the Chapel; the 151 m retaining wall to the immediate south of the St. Kevin's Hospital building and the partial demolition of the existing 350 sq m link corridor structure, to be replaced with an integrated landscaped amenity area in the footprint of the original structure.) 2 no. new 228 sq m extensions with bridge access are to be provided to the rear of the St. Kevin's Hospital Building and 2 no. 31 sq m new glazed porch extensions to the south.

The development will also include the provision of a play area to the immediate east of St. Kevin's Hospital; private, communal and public open space (including all balconies and terraces at all levels); internal roads and pathways; pedestrian access points; hard and soft landscaping; boundary treatments including the repair of some existing boundary walls; the provision of new surface water and foul drainage pipes and any associated pipe diversion works; new retaining walls; a new internal access road; changes in level; services provision and related pipework; electric vehicle charging points; attenuation tanks; SUDS; signage; the upgrading of the existing access from Beechtree Avenue; public lighting and all site development and excavation works above and below ground.

The proposed development will see site clearance and a construction phase to include all associated infrastructure as shown in figure 3. All semi-natural habitats on the site are to be cleared. Post construction the land will be landscaped.



Figure 3 – Development overview.

5 POTENTIAL IMPACT OF THE PROPOSED DEVELOPMENT

This section provides a description of the potential impacts that the proposed development may have on biodiversity in the absence of alleviation. Methodology for determining the significance of an impact has been published by the NRA. This is based on the valuation of the ecological feature in question (table 6) and the scale of the predicted impact. In this way, it is possible to assign an impact significance in a transparent and objective way. Table 7 summaries the nature of the predicted impacts.

5.1 Construction Phase

The following potential impacts are likely to occur during the construction phase in the absence of alleviation:

1. The removal of habitats including dry meadow, recolonising bare ground and buildings and artificial surfaces. These are of low local or negligible ecological value. The species to be found are common and widespread and for this reason the impact to biodiversity from the loss of these habitats is considered to be **minor negative**. This impact will be offset by the planting of new trees as part of a landscaping programme (see figure 3).

169 individual trees were identified from the site by Tree Management Services. No tree was classified as category A (Those of high quality with an estimated remaining life expectancy of at least 40 years); 19 were classified as category B (Trees of moderate quality with an estimated remaining life expectancy of at least 20 years); 126 were classified as category C (Those of low quality with an estimated remaining life expectancy of at least 10 years) while the remainder (24) were classified as Category U (Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years).

All 29 Category U trees are recommended for removal due to poor condition while a further 82 are to be removed due to conflict with the project design (14 category B and 68 category C). The impact of this removal is assessed as minor negative.

The loss of these trees, a number of which are native species, will result in a moderate negative impact to biodiversity.

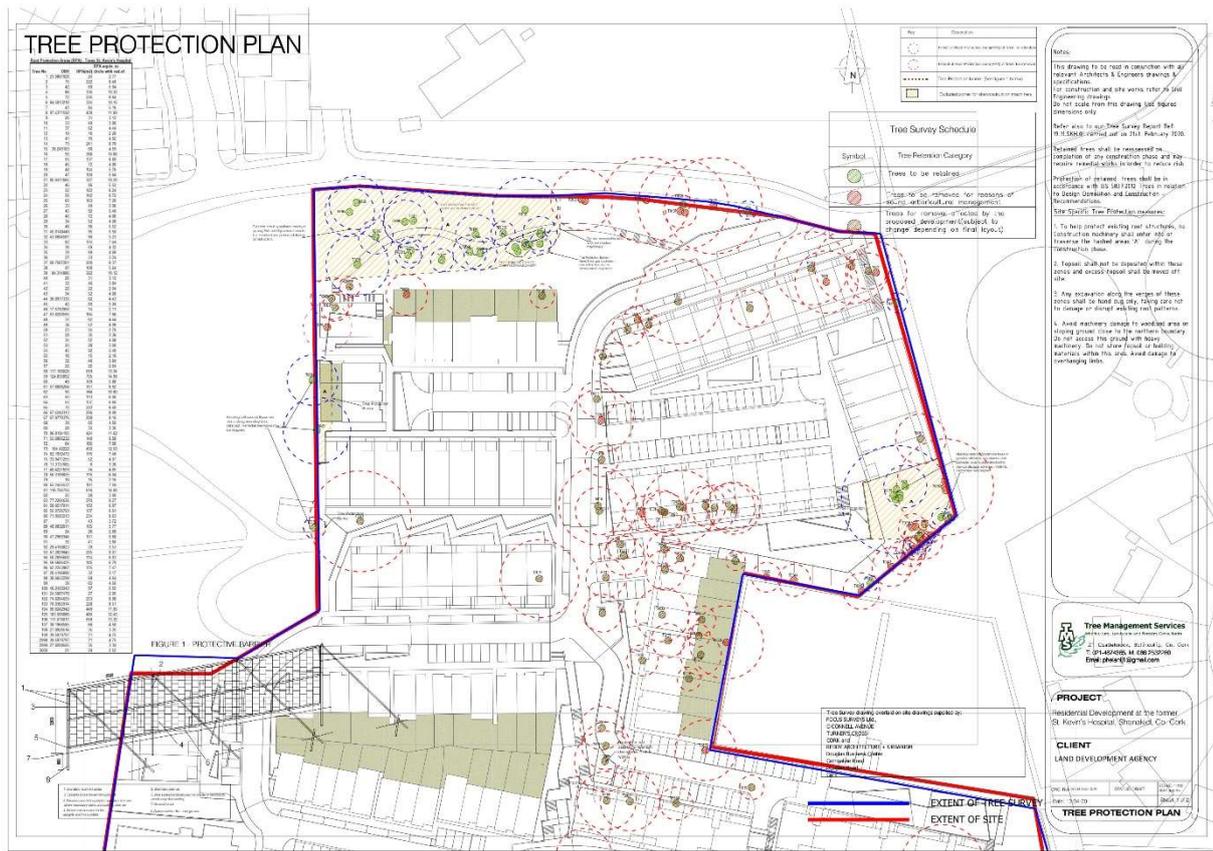


Figure 4 – Tree protection plan (northern) showing trees to be removed (red) and trees to be retained (green).

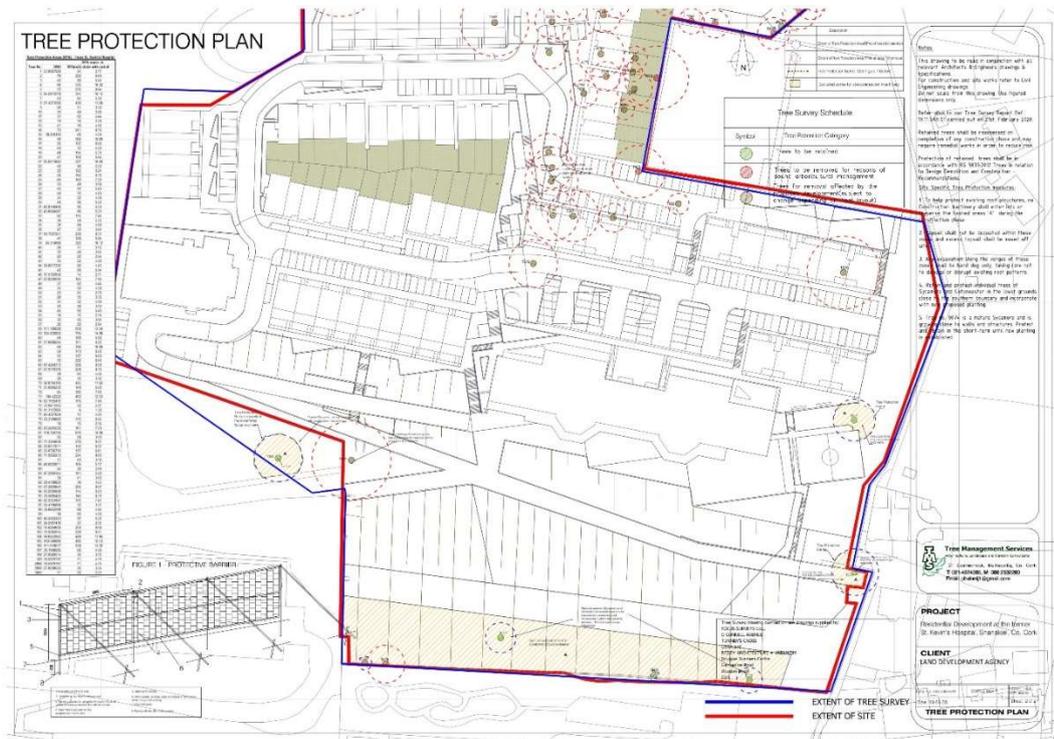


Figure 5 – Tree protection plan (southern) showing trees to be removed (red) and trees to be retained (green).

2. The direct mortality of species during site clearance. This impact is most acute during the bird breeding season which can be assumed to last from March to August inclusive. This may affect a number of locally common countryside birds. Suitable areas for bird nesting are very limited but nevertheless all nests and eggs are protected under the Wildlife Act. A full breeding bird survey has yet to be carried out.

The following is taken from the bat survey report:

Potential impact on roosts, flight paths and feeding areas without alleviation:

(1) Loss of roosts – If the buildings are demolished or restored, there will be a loss of at least eleven roosts. Many of the buildings are in a dangerous condition.

Without alleviation there will be a long-term severe impact on individuals of three species of bats.

3. Pollution of water courses through the ingress of silt, oils and other toxic substances. As there are no water courses in this vicinity, this impact is considered to be **minor negative** at worst. Nevertheless, best practice should be followed in order to prevent pollution during the construction phase.
4. Spread of invasive species. Japanese Knotweed spreads easily through disturbance of visible stems and subterranean rhizomes, which can spread up to 7m from visible parts of the plant. An initial site assessment has been carried out by Invasive Plant Solutions which also identified Three-cornered Garlic and Spanish Bluebells on the lands. A treatment programme will commence during the 2021 growing season and a multi-annual control plan is to be prepared based on recommendations made by Invasive Plant Solutions. Refer to this report for full details.

Operation Phase

The following potential impacts are likely to occur during the operation phase in the absence of alleviation:

5. Pollution of water from foul wastewater arising from the development. Foul wastewater from the proposed development will be sent to the wastewater treatment plant for Cork at Little Island. This plant is licenced by the EPA to discharge treated effluent into Cork Harbour (licence no.: D0033-01). The most recent Annual Environmental Report (AER) for this plant, prepared by Irish Water for the 2018 calendar year, indicates that the discharge was not compliant with the emission limit values (15 exceedences were recorded for COD and total phosphorous). The report states however that no observable impact to ambient water quality or Water Framework Directive status is occurring. The treatment capacity is 413,200 P.E. (population equivalent) and the AER states that capacity is not expected to be exceeded in the next three years. A separate screening report for Appropriate Assessment specifically examines the impacts of this project on Natura 2000 areas in Cork Harbour however there is currently no evidence that non-compliance issues at the WWTP are having negative effects to features of high ecological value (e.g. wading birds or intertidal habitats).

6. Pollution of water from surface water run-off. The Greater Dublin Strategic Drainage Study (2005) identified issues of urban expansion leading to an increased risk of flooding in the city and a deterioration of water quality. This arises where soil and natural vegetation, which is permeable to rainwater and slows its flow, is replaced with impermeable hard surfaces. A new surface water drainage system is to be installed in accordance with the GDSDS. No negative effect arising to the quantity or quality of surface run-off will occur. This will include SUDS approaches including attenuation storage, permeable paving, rain gardens and grasscrete. Final discharge will be to the combined foul sewer.

7. Impacts to Natura 2000 areas (SACs or SPAs) in Cork Harbour are not predicted to occur, principally due to the separation distance between the site and these areas. A full assessment of potential effects to these areas is contained within a separate Screening Report for Appropriate Assessment. There are no pathways to other designated area for nature conservation.

8. Impacts to bats. Bats may suffer of loss of feeding habitat through the direct affects to trees and other vegetation, as well as indirectly though the imposition of artificial lighting. The following is taken from the bat survey report:

Potential impact on roosts, flight paths and feeding areas without alleviation:

Without alleviation there will be a long-term severe impact on individuals of three species of bats.

(2) Loss of feeding – Three species fed overnight. The development will take up space which is currently a green area. Without alleviation and planting of native species, there will be a large reduction in insect numbers and a long-term severe negative impact on individuals of four species of bats.

(3) Light pollution – Lux levels on the site are 0 lux throughout the night. Light levels within the new development are likely to be high throughout the site. Without alleviation there will be a moderate long-term negative impact on four species ,most particularly on the Daubenton's bat.

This will have a medium to long-term negative impact on individual bats during construction phase. When the new buildings are in place with heated bat boxes, there will be a moderate long term negative impact.

Table 7: Significance level of likely impacts in the absence of alleviation

Impact		Significance
Construction phase		
1	Loss of habitats	Minor negative
2	Mortality to animals during construction, including nesting birds	Major negative – permanent impacts to species of high local value/or species with legal protection
3	Pollution of water during construction phase	Minor negative
4	Spread of invasive species	Moderate negative

Operation phase		
5	Wastewater pollution	Neutral
6	Surface water pollution	Neutral
7	Impacts to protected areas	Neutral
8	Impacts to bats	Major negative

Overall it can be seen that three potential negative impacts are predicted to occur as a result of this project which are moderate negative or greater in magnitude in the absence of alleviation.

5.2 Cumulative impacts

A number of the identified impacts can also act cumulatively with other impacts from similar developments in this area of Cork. These primarily arise through the additional loading to the Little Island Wastewater Treatment Plant. It is considered that this effect is not significant due to the existing availability of treatment capacity.

In this instance, the incorporation of SUDS attenuation measures will result in no negative effect to surface water quality.

Increasing urbanisation of Cork, and in particular land use change from open grassland to urban uses, is resulting in the loss of habitat for common species of plants and animals. In this case, there are no high value habitats while post-construction landscaping will provide additional resources for wildlife.

6 AVOIDANCE, REMEDIAL AND ALLEVIATION MEASURES

This report has identified three impacts that were assessed as 'moderate negative' and so alleviation is needed to reduce their severity.

6.2 Alleviation Measures Proposed

The following alleviation measures are proposed for the development

Construction Phase

1. Habitat loss. The landscaping plan provides for new planting which includes a range of native and non-native trees which have been chosen for their amenity and biodiversity value. This includes supplementary planting in the woodland area to the north which is to be retained as well as 8,510m² of mixed, native species hedgerow. While this will nevertheless result in a short-term negative effect

to the habitat on the site, in the medium to long-term this will be offset entirely so that no long-term negative impacts to biodiversity will arise from habitat loss.

2. Disturbance of birds' nests and bats

Deliberate disturbance of a bird's nest is prohibited unless under licence from the National Parks and Wildlife Service (NPWS). If possible, site clearance works should proceed outside the nesting season, i.e. from September to February inclusive. If this is not possible, vegetation must first be inspected by a suitably qualified ecologist. If a nest is encountered then works must stop, until such time as nesting has ceased. Otherwise, a derogation licence must be sought from the NPWS to allow the destruction of the nest.

2. The following recommendations are taken from the bat survey report:

- A derogation licence will be sought from NPWS prior to any work commencing. Bat exclusions may be carried out if safety permits. Any demolitions on roost areas must be supervised by an ecologist. All slates at eaves, around flashing or broken slates in buildings, must be removed in the presence of a bat specialist
- If bats are discovered at any stage of the development, building work must cease and myself and the wildlife ranger must be contacted.
- No work can take place on the roost areas from May to September as bats may be breeding.
- All fascia must be removed by hand prior to any demolition.
- The underground section of the communication corridor, building 6 and the basement of the former Roman Catholic chapel, building 5 must be checked for bats prior to any sealing or renovation.
- The trees on the site are not roosts at present. However, they have potential as roosts, and any felling of mature, ivy clad, or damaged trees should be preceded by a bat assessment. This should take place immediately before felling. These trees should not be felled in winter (bat hibernation) or in the bird nesting season.
- The wall to the front was ivy clad. Removal of the ivy and removal of the wall will be supervised by an ecologist.

3. Japanese Knotweed/Three-cornered Garlic/Spanish Bluebell

A number of detailed recommendations have been made for the continued assessment and eradication of alien invasive species on this development site. These are described in full in the Site Assessment Report and Management Plan which has been prepared by Invasive Plant Solutions.

4. The risk of pollution to water courses is very low. However, best practice should nevertheless be followed at all time. Construction practices will follow guidance from Inland Fisheries Ireland (2016) and are outlined in a Construction and Environmental Management Plan which has been prepared by O' Callaghan Moran & Associates (see section 4.7). This includes ensuring that dangerous substances

are stored in bunded areas at all time. Silt-laden water will not be permitted to leave the site. In the unlikely event that surface run-off needs to be discharged from the site, this will only occur via a suitably-sized silt-trap or settlement pond.

While these measures are intended to protect water quality, there is no risk to Natura 2000 sites downstream of this point. In the event that these alleviation measures are not implemented, no impacts to Natura 2000 sites can occur.

5. The following recommendations are taken from the bat survey report:

- Bats will suffer a loss of feeding. Native shrubs and trees will be used within the new development. Where other climbers and shrubs are required, they should be taken from the approved list from the All-Ireland Pollinator Plan. The existing woodland will be retained and supplemented at the north of the site. Native woodland planting will take place at the north east and south of the site. Native hedgerow will be planted to the west of the site .
- Dark sky areas are designated within the development to provide commuting and feeding corridors, and light spillage and pollution will be kept to a minimum with the use of cowls, caps, and low-level bollard lighting. Dark sky areas are designated to the north and east of the site, with the main dark sky area proposed at the south of the site, allowing bats access to the river. Lighting along the treelined walkway at the north of the site will use low level bollard lights, to prevent light spillage onto the tree canopies. See Appendix 1 for a map of the lighting.
- Lighting design will be in accordance with Bats and Lighting – Guidance Notes for Planners, Engineers, Architects, and Developers (Bat Conservation Ireland, 2010); Bats and Lighting in the UK – Bats and the Built Environment Series (Institute of Lighting Professionals, September 2018); Guidance Notes for the Reduction of Obtrusive Light GN01 (Institute of Lighting Professionals, 2011).
- Two heated bat boxes will be attached to the new buildings. These will require a power supply. In addition, two 1 FR Schwegler bat tubes will be built into the chapel. Three 2F and four 1FF Schwegler bat boxes with built-in timber panel bat boxes will be put in place. These will be placed on trees or posts, at least 3m high, with a clear drop below (as bats need to drop to start their flight). These can be purchased from www.nhbs.com They will be placed in dark areas in the north, east and south of the site – see Appendix III for bat box locations.

8 PREDICTED IMPACTS OF THE PROPOSED DEVELOPMENT

This section allows for a qualitative description of the resultant specific direct, indirect, secondary, cumulative, short, medium and long-term permanent, temporary, positive and negative effects as well as impact interactions which the proposed development may have, assuming all alleviation measures are fully and successfully applied.

The following conclusions are taken from the bat survey report:

- Loss of roosts – If the buildings are demolished or restored, there will be a loss of at least eleven roosts. Eleven bat boxes will be put in place. Two of these boxes will be heated, and a variety of box types will be used to provide different temperature ranges. However, it is likely that there will still be some loss of roost availability.
- There will be a moderate to severe short-term negative impact on individual bats during the construction phase when exclusions are taking place. When the new buildings are in place with heated bat boxes, and all other roost options are in place, there will be a mild to moderate long-term negative impact.
- Loss of feeding – Three species fed overnight. With retention and supplementation of trees in the woodland and hedgerows, and planting from the All-Ireland pollinator plan, there will be a long-term mild negative effect on individual bats
- Light pollution – Lux levels on the site are 0 lux throughout the night. Dark sky areas will allow bats use existing flightpaths. This is particularly important to allow the Daubenton's bat to travel to the river. Hence the area in front of the River Lee has been designated a dark sky area. Even with alleviation, there is likely to be some light spillage on the centre of the site in the future. This will have a mild long-term effect on individual bats.

After alleviation, no other residual effects are likely to arise to biodiversity arising from this project which could be assessed as moderate negative or greater.

9 MONITORING

Monitoring is required where the success of alleviation measures is uncertain or where residual impacts may in themselves be significant.

In this case monitoring for Japanese Knotweed and other alien invasive species will be required to ensure it does not re-emerge. A schedule of monitoring has been included in the Invasive Species Management Plan.

The bat survey report recommends that “monitoring of the bat boxes should take place within a year of the development being built, and the location of the bat boxes should be changed if they are unused and their site is unsuitable.”

10 REFERENCES

- Bullock C., Kretch C. & Candon E.** 2008. *The Economic and Social Aspects of Biodiversity*. Stationary Office.
- Clabby, K.J., Bradley, C., Craig, M., Daly, D., Lucey, J., McGarrigle, M., O'Boyle, S., Tierney, D. and Bowman, J.** 2008. *Water Quality in Ireland 2004 – 2006*. EPA.
- Colhoun K. & Cummins S.** 2013. *Birds of Conservation Concern in Ireland 2014 – 2019*. Irish Birds. Volume 9 Number 4 pg523-541.
- Cooney R. & Dickson B.** 2005. *Biodiversity and the Precautionary Principle*. Earthscan.
- Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora
- Council Directive 97/11/EEC of 3rd March 1997 amending Directive 85/337/EEC on the assessment of the effects of certain public and private projects on the environment
- Council Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy – more commonly known as the Water Framework Directive
- Department of Arts, Heritage and the Gaeltacht.** 2011. *Actions for Biodiversity 2011 – 2016. Ireland's National Biodiversity Plan*.
- DG Environment.** 2010. *Natura 2000 European Commission Nature and Biodiversity Newsletter*. Number 28. June 2010. ISSN: 1026-6151.
- EPA.** 2002. *Guidelines on the information to be contained in Environmental Impact Statements*.
- EPA,** 2003. *Advice Notes on Current Practice (in the preparation of Environmental Impact Statements)*
- Fitter R., Fitter A. & Farrer A.** 1984. *Grasses, sedges, rushes and ferns of Britain and Northern Europe*. Collins.
- Fossitt J.** 2000. *A Guide to Habitats in Ireland*. Heritage Council.
- Harris S. & Yalden D.W.** 2008. *Mammals of the British Isles: Handbook, 4th Edition*. The Mammal Society.
- Hill M.O., Blackstock T.H., Long D.G. and Rothero G.P** 2008. *A Checklist and Census Catalogue of British and Irish Bryophytes*. British Bryological Society.
- Hundt L.** 2012. *Bat Surveys: Good Practice Guidelines. 2nd Edition*. Bat Conservation Trust.
- IEEM.** 2016. *Guidelines for Ecological Impact Assessment in the United Kingdom*. Institute of Ecology and Environmental Management.
- Institute of Environmental Assessment,** 1995. *Guidelines for Baseline Ecological Assessment'*
- Johnson O. & More D.,** 2004. *Tree Guide'*, Collins
- Lewis L., Burke B. & Crowe O.** 2016. *Irish Wetland Bird Survey: Results of Waterbird Monitoring in Ireland in 2014/15*.
- Mason C.F.** 1996. *Biology of Freshwater Pollution*. Longman.
- Morris P. & Therivel R.,** 2001. *Methods of Environmental Impact Assessment*, Spon Press
- NRA.** 2009. *Guidelines for Assessment of Ecological Impacts of National Road Schemes*. National Roads Authority.

Parnell J. & Curtis T. 2012. *Webb's An Irish Flora*. Cork University Press.

Preston C.D., Pearman D.A. & Dines T.D. 2002. *New Atlas of the British & Irish Flora*. Oxford University Press.

Rich C. & Longcore T. Editors. 2006. *Ecological Consequences of Artificial Night Lighting*. Island Press.

Sargent G. & Morris P. 2003. *How to Find & Identify Mammals*. The Mammal Society.

Smith G. F., O'Donoghue P., O'Hora K. and Delaney E. 2010. *Best Practice Guidance for Habitat Survey and Mapping*. Heritage Council.

Stace C. 2010. *New Flora of the British Isles*. Cambridge University Press

Statutory Instrument No. 94 of 1999. Flora (Protection) Order

Treweek J., 1999. *Ecological Impact Assessment'*, Blackwell Science.

United Nations. 1992. *Convention on Biological Diversity*