

Ecological Impact Statement for development, Leopardstown Road, Dublin 18

Compiled by OPENFIELD Ecological Services
For Dún Laoghaire Rathdown County Council

Pádraic Fogarty, MSc MIEMA



www.openfield.ie

February 2025

1 INTRODUCTION

This Ecological Impact Statement has been prepared by Pádraic Fogarty of OPENFIELD Ecological Services. Pádraic Fogarty has worked for over 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, 2018).

Site visits were carried out on the 31st of July and the 19th of September 2024 in fair weather. The development 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).

July and September lie within the optimal 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. July lies within the season for surveying breeding birds, although is suboptimal, while these dates are outside the optimal period for surveying amphibians and large mammals (especially Badgers).

A bat survey was carried out during the optimal flight season in 2024 and while this report is presented separately, the findings are incorporated here.

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. In the Dun Laoghaire Rathdown County Development Plan (2022-2028) states:

Policy Objective GIB18: Protection of Natural Heritage and the Environment

It is a Policy Objective to protect and conserve the environment including, in particular, the natural heritage of the County and to conserve and manage Nationally and Internationally important and EU designated sites - such as Special Protection Areas (SPAs), Special Areas of Conservations (SACs), proposed Natural Heritage Areas (pNHAs) and Ramsar sites (wetlands) - as well as non-designated areas of high nature conservation value known as locally important areas which also serve as 'Stepping Stones' for the purposes of Article 10 of the Habitats Directive.

There is no system in Ireland for the designation of sites at a local, or county level.



Figure 1 – Site location in Sandyford (red cross) with nearby areas designated for nature conservation (from www.epa.ie).

There are no Natura 2000 sites within physical proximity of the development site. Natural, surface hydrological pathways lead to the Carrickmines Stream, although this catchment has been highly modified in urbanised areas due to soil sealing, culverting and the laying of surface drainage sewers. This water course discharges directly to the Irish Sea. There are no areas designated for nature conservation along its course or at its mouth.

Foul wastewater leads to the Irish Sea via the Shanganagh wastewater treatment plant. Freshwater abstraction may originate in the Poulaphouca Reservoir Special Protection Area. The Fitzsimons Woods pNHA (site code: 1753) can be found c.850m to the west of the development site. The Rockabill to Dalkey Island SAC and the Dalkey Islands SPA are located in the Irish Sea not far from the south Dublin coast. There are no other areas designated for nature conservation within the zone of influence of this project.

Fitzsimons Wood pNHA (site code: 1753) is an example of a naturalised woodland along a river valley with a range of native species. It is located approximately 3.8km to the south-west of the Woodlands Park development site.

At its nearest point the **Poulaphouca Reservoir SPA** (site code: 4063) is located approximately 28km from the site of the proposed development. Its 'qualifying interests' include the Greylag Goose *Anser anser* and the Lesser Black-backed Gull *Chroicocephalus ridibundus*.

- Greylag Goose. Wintering Greylag Geese are very scattered in Ireland and occur on both coastal and inland sites. Their population has expanded greatly in their more northerly ranges (Iceland and Scotland) and this has coincided with losses elsewhere.
- 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 (Balmer et al., 2013).

Rockabill to Dalkey Island SAC (site code: 0300). This off-shore (i.e. marine) SAC has two qualifying interests which are reefs and Harbour Porpoise *Phocoena phocoena*. Conservation objectives for this SAC have been published to maintain or restore the area of habitat and status of the population to 'favourable conservation status'.

- Reefs can be intertidal or subtidal features and are characterised by hard or rocky substrates. The main pressures that have been identified by the NPWS are commercial fishing, aquaculture, water pollution and commercial/recreational uses of the marine environment. Nationally their status is assessed as 'bad' (NPWS, 2013a).
- Harbour porpoise This is the smallest cetacean species regularly occurring in Irish waters. It is commonly found in residential pods close to the shore and it is not considered threatened in Irish waters. Its status nationally is 'good'.

Dalkey Islands SPA (site code: 4172) is protected for its breeding colonies of three tern species and is found approximately 4.3km south east of the West Pier at Dun Laoghaire.

- **Roseate Tern.** This tern breeds at only a few stations along Ireland’s east coast. Most of these are in decline although at Dublin their colony is increasing.
- **Common Tern.** This summer visitor nests along the coast and on islands in the largest lakes. Its breeding range has halved in Ireland since the 1968-1972 period.
- **Arctic Tern.** These long-distance travellers predominantly breed in coastal areas of Ireland. They have suffered from predation by invasive mink and are declining in much of their range.

South Dublin Bay SAC/pNHA (side code: 0210; c.850m from the development site) is concentrated on the intertidal area of Sandymount Strand (NPWS, 2015d). It has four qualifying interests: mudflats and sandflats not covered by seawater at low tide (1140), annual vegetation of drift lines (1210), *Salicornia* and other annuals colonising mud and sand (1310) and Embryonic shifting dunes (2110).

- **Annual vegetation of drift lines (1210)** This habitat of the upper shore is characterised by raised banks of pebbles and stones. They are inhabited by a sparse but unique assemblage of plants, some of which are very rare. The principle pressures are listed as gravel extraction, the building of

The website of the National Biodiversity Data Centre contains a mapping tool that indicates historic records of legally protected species within a selected Ordnance Survey (OS) 10km grid square. The development site is located within the square O12 and two species of protected flowering plant and one bryophyte (moss) are highlighted. These species are detailed in Table 1. It must be noted that this list cannot be seen as exhaustive as suitable habitat may be available for other important and protected species.

Table 1 – Known records for protected species within the O12 10km square

Species	Habitat ¹	Last record, location
<i>Hammarbya paludosa</i> Bog Orchid	Peatlands and wetlands	2011
<i>Vicia orbus</i> Wood-bitter Vetch	Rocky ground	2017
<i>Orthotrichum stramineum</i> Straw Bristle-moss	Uplands	2018

Water quality in rivers, canals and estuaries is monitored on an on-going basis by the Environmental Protection Agency (EPA). There are no water courses identified by the EPA in the vicinity. The EU’s

¹ Parnell et al., 2012

Water Framework Directive (WFD) stipulates that all water bodies must attain 'good ecological status' by 2015, or, with some exceptions, by 2027 at the latest. The Carrickmines Stream and its tributaries (water body code: IE_EA_10C040350) is assessed as 'good status' while the coastal waters of the Southwestern Irish Sea - Killiney Bay (HA10) (water body code: IE_EA_100_0000) is 'high status'. These data are taken from the ENVision mapping tool on www.epa.ie.

3.2 Site Survey

Aerial photography from the Ordnance Survey Ireland and historic mapping shows that this area has been within the urban fabric of Dublin since historical times.

3.2.1 Flora

The site surveys showed that an open area to the east is composed of **amenity grassland – GA2** which is regularly mowed. Species here include Hawkweed *Hieracium sp.*, Docks *Rumex sp.*, Clovers *Trifolium sp.*, Meadow Buttercup *Ranunculus acris* and Perennial Rye-grass *Lolium perenne*. The roadside boundary of this area is composed of a wire fence with occasional Bramble *Rubus fruticosus agg.*, Butterfly-bush *Buddleia davidii*, Gorse *Ulex europaeus* and saplings of Sycamore *Acer pseudoplatanus*.

The western portion is made up of **buildings and artificial surfaces – BL3** which includes a home and garden surrounds. Garden vegetation is entirely non-native and is highly modified with a grass lawn and horticultural shrubs and trees including New Zealand Holly *Olearia macrodonta*, Palm *Palmus sp.*, Laurel *Prunus sp.* etc. Boundary **hedgerows – WL1** are non-native Privet *Ligustrum vulgare* or New Zealand Broadleaf *Grisilinia littoralis* while scattered trees include Sycamore, Cypress *Cuprocyparis sp.*, Cherry *Prunus sp.* and Copper Beech *Fagus sylvatica*.

A band of **scrub – WS1** vegetation passes along the northern boundary and develops into a **treeline – WL2** in places. To the north of this lies the M50 motorway. It is composed of Sycamore, Gorse, Grey Willow *Salix cinerea*, Field Maple *Acer campestre*, Ash *Fraxinus sylvestris*, Scots Pine *Pinus sylvestris*, Elder *Sambucus nigra*. These habitats are largely outside the development site boundary however it includes an area to the north of 'Wild Rock', as shown in figure 2.

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.

3.2.2 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 2 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 2 – Protected mammals in Ireland and their known status within the O12 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 development 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	Wide range of habitats
Pine Marten <i>Martes martes</i>			Broad-leaved and coniferous forest
Hedgehog <i>Erinaceus europaeus</i>	Wildlife (Amendment) Act, 2000	Woodlands and hedgerows	

² From the National Biodiversity Data Centre, excludes marine cetaceans

³ Harris & Yalden, 2008

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

Due to the nature of habitats on the development site and its proximity to busy roads, there is no suitable habitat for the majority of the species listed in table 2.

There is no suitable habitat for Otter. There are no Badger setts and the lands are sub-optimal given the proximity to the M50 and other roads.

Small mammals such as the Irish Stoat, Hedgehog and Pygmy Shrew are widespread in the Irish countryside, including on land in suburban areas (Lysaght & Marnell, 2016). Rabbits *Oryctolagus cuniculus* are common in Dublin (although no evidence of their presence was recorded) along with Brown Rat *Rattus norvegicus*, House Mouse *Mus domesticus* and Field Mouse *Apodemus sylvaticus*. These species are not protected. Fox *Vulpes vulpes* is also common. A burrow in the garden of 'Wild Rock' was noted and it likely to have been a Fox den. It was not in use however, as evidenced by cobwebs and a build-up of debris at the entrance.

A dedicated bat survey was carried out by Atemar during the optimal flight period. Their report concludes that:

No confirmed bat roosts were recorded in any onsite tree, structure, or vegetation. No bats were observed emerging from any of the onsite structures, trees, or vegetation. As a result, no confirmed bat roosts will be impacted by the proposed development. Therefore, a NPWS derogation licence is not required. Foraging activity of two relatively common bat species (Lesser Noctule & Soprano Pipistrelle) were noted on site. Foraging activity was concentrated to treelines and hedges throughout the proposed site outline where large numbers of insects were swarming in the sheltered conditions.

Bird species recorded from the site were Blackbird *Turdus merula* and Robin *Erithacus rubecula*. These are species of 'low conservation concern' (Green list, Gilbert et al., 2021). Suitable nesting habitat is available for common garden birds in trees and garden vegetation, as well as scrub.

The lands do not provide suitable habitat for wetland/wading/wintering birds which may be associated with coastal Natura 2000 sites.

There is no suitable habitat for breeding Common Frog *Rana temporaria* or Smooth Newt *Lissotriton vulgaris*. Common Lizard *Zootoca vivipara* is considered widespread and may be present. There are no suitable habitats for fish and the development site is not within the catchment of any water course of fisheries significance.

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.

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

In summary, it has been seen that the development site is made up of a home with garden within a built-up area, along with an adjacent area of amenity grassland and scrub. There are no examples of habitats listed on Annex I of the Habitats Directive or records of rare or protected plants. There are no plant species listed as alien invasive as per SI 477 of 2011. There are a number of trees and other shrubbery which collectively provide habitats for a some of common and widespread species.

Significance criteria are available from guidance published by the National Roads Authority (NRA, 2009). These are reproduced in table 3. From this an evaluation of the various habitats and ecological features on the site has been made and this is shown in table 4.



Figure 2 – Development boundary of the development site and habitats

Table 3 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>
B - National importance	<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 4 Evaluation of the importance of habitats and species on the development site

<p>Buildings and artificial surfaces – BL3 Amenity grassland – GA2 Non-native hedgerow – WL1</p>	<p>Negligible ecological value</p>
<p>Treeline – WL2 Scrub – WS1</p>	<p>Low local ecological value</p>

4 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

The development will consist of 80 no. residential units together with associated infrastructure including open space and car/cycle parking and is a mixture of duplexes and apartments in 2 no. blocks ranging in height from three to six storeys.

The development will see the removal of vegetation including trees and scrub. Post-construction there will be landscaping. The site layout is shown in figure 3.



Figure 3 – Development overview and landscaping

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 mitigation. 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 4) 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 5 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 mitigation:

1. The removal of habitats including garden vegetation, trees and scrub. Approximately 582m² of scrub along with 20 trees and 4 lengths of hedge as shown in figure 4. These habitats are of low or negligible local biodiversity value. Trees and hedges to be removed are non-native and can be considered to be of low biodiversity value.



Figure 4 – Trees and vegetation to be retained and removed.

Since the tree and hedge species on the development site are non-native the impact to biodiversity from the loss of this habitat is limited. The loss of native vegetation in scrub habitat

will affect species which are common and widespread in this area. It will result in reduced foraging opportunities for bats. The loss of habitat does not affect the integrity of any species population normally present in this region. The impact to local biodiversity is considered to be **minor negative**. This impact will be offset over the long term by new planting of native and non-native trees and shrubs.

2. The direct mortality of species during demolition. This impact is most acute during the bird breeding season which can be assumed to last from March to August inclusive. In this case suitable nesting habitat is present in trees, scrub and garden vegetation. Although no bat roosts were confirmed from the site, there are features with bat roost potential.
The potential negative effect here is **moderate negative**.
3. Pollution of water courses through the ingress of silt, oils and other toxic substances. The potential for pollution of water courses during the construction phase is **minor negative** in magnitude due to the absence of water courses in this vicinity as well as the absence of sensitive fisheries habitat in this catchment. Best practice site management should nevertheless be observed.

Operation Phase

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

4. Pollution of water from foul wastewater arising from the development. Foul wastewater from the proposed development will be sent to the wastewater treatment plant at Shanganagh in Dublin. Emissions from the plant were in full compliance with the Urban Wastewater Treatment Directive for 2023 (the most recent year for which data is available). This plant discharges treated wastewater to the Irish Sea south of Dublin Bay. The impact to biodiversity from this source will be **neutral**.
5. 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. This will include a variety of SUDS measures including green roof, blue roof, permeable paving, aco-drains, tree pits, soakaways, petrol interceptors and French drains. No negative effect arising to the quantity or quality of surface run-off will occur.

6. Artificial Lighting. Increases in artificial lighting can affect biodiversity although little data is available for most species groups. Research has focussed on bats, which are sensitive to artificial lighting to varying degrees. For sensitive species, lighting can result in an effective loss of habitat or severing of foraging or commuting routes. According to the bat survey:

Lighting during construction and operation could potentially lead to impacts on foraging, however the lighting has been designed to minimise light spill onto woodland. It should be noted that there is existing public lighting and spill from the M50 north of the site. It would be expected that bats would continue to forage on site.

In the absence of mitigation the potential effect of artificial lighting is therefore **moderate negative**.

7. Impacts to protected areas

A full assessment of potential effects to Natura 2000 sites is contained within a separate Screening Report for Appropriate Assessment. This found that no significant effects were likely to arise to any Natura 2000 site.

The Fitzsimons Wood pNHA is found c.850m from the development site but there is no pathway from the development to this area and so no impacts can occur. There are no pathways to any other area which is designated for nature conservation.

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

Impact	Significance	
Construction phase		
1	Loss of habitat	Minor negative
2	Mortality to animals during construction, including nesting birds and bats	Moderate negative
3	Pollution of water during construction phase	Minor negative
Operation phase		
4	Wastewater pollution	Neutral
5	Surface water pollution	Neutral
6	Artificial Lighting	Moderate negative
7	Protected areas	Neutral

Overall it can be seen that two potential moderate negative impacts are predicted to occur (mortality to animals during construction and artificial lighting) as a result of this project in the absence of mitigation.

5.2 Cumulative impacts

Potentially cumulative impacts were identified based on projects which are permitted or planned in the immediate vicinity of the development site as well as through the catchment of the Shanganagh wastewater treatment plant. While not considered necessary to list these individually, these include new development on brown-field sites, infrastructure projects such as roads and drainage, as well as new developments on green-field sites. Development throughout Dublin is based upon forward planning by the four local authorities in Co. Dublin and their associated development plans. Each of these plans has been subject to Strategic Environmental Assessment and, where relevant, mitigation has been proposed to ensure significant effects to the environment do not occur.

The impacts from built development in this area include loss of habitat, additions to drainage infrastructure, particularly wastewater and surface water, and the cumulative effects of pollution arising from multiple construction projects happening at the same time.

Additional loading to the Shanganagh Wastewater Treatment Plant will not result in negative effects to biodiversity as the plant is operating within capacity and to a high standard.

In this instance the incorporation of separate foul and surface water drainage systems and SUDS attenuation measures into a suburban site is ensuring that no negative effect to water quality or biodiversity arises from this source.

Due to the post-construction landscaping, the proposed development is not contributing to a cumulative loss of habitat which may be acting cumulatively in this vicinity and no significant effects will arise from this source.

Cumulative negative effects could arise through increases in artificial lighting and this impact has been assessed at 'moderate negative'. Mitigation is recommended to reduce the magnitude of this impact in section 6.

There are no other effects which could act in a cumulative way to result in significant impacts to biodiversity.

6 AVOIDANCE, REMEDIAL AND MITIGATION MEASURES

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

6.1 Mitigation Measures Proposed

The following mitigation measures are proposed for the development

Construction Phase

1. 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, trees 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.

From the bat report:

- A pre-construction assessment of buildings on site will be carried out. If bats are found a Derogation Licence will be sought and conditions applied.
- A Pre-Construction inspection for bat roosts will be carried out by a suitably qualified ecologist in trees of bat roosting potential prior to site clearance works. If bats are found a Derogation Licence will be sought and conditions applied.
- 3 Bat boxes will be placed on site in consultation with the project ecologist.

2. Artificial lighting. Guidelines from Bat Conservation Ireland (BCI, 2010) highlight the potential effects to bats from different types of light as well as overall light levels. It recommends that light levels should be maintained at or below 3lux.

From the bat report:

- Lighting at all stages will be done sensitively on site with no direct lighting of treelines and hedges.
- Lighting will comply with bat lighting guidelines
- A post construction lighting assessment will be carried out by the project ecologist.

3. Construction pollution. Moderate negative (or greater) impacts are not predicted to arise to water courses during construction. Nevertheless, every effort should be made to avoid pollution during this phase. This should include storage of fuels and other dangerous substances in bunded areas and ensuring that sediment laden water does not enter surface sewers. Silt traps and/or settlement ponds will be used so that only clean water leaves the development site.

7 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 mitigation measures are fully and successfully applied.

For impacts which have been identified, after mitigation, no residual effects are likely to arise to biodiversity arising from this project which can be assessed as moderate negative or greater.

8 MONITORING

Monitoring is required where the success of mitigation measures is uncertain or where residual impacts may in themselves be significant. The bat report recommends that a post construction lighting assessment be carried out by the project ecologist.

9 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*