

# Ecological Impact Assessment for proposed Strategic Housing Development on lands on Greenhills Road (north of Bancroft Park, south/west of Hibernian Industrial Estate and east of Airton Road junction), Tallaght, Dublin 24

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## **1 INTRODUCTION**

This Ecological Impact Assessment 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, 2018).

A site visit was carried out on the 15<sup>th</sup> of April 2022 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).

April lies 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. April lies within the season for surveying breeding birds, amphibians and large mammals.

## **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.



**Figure 1 – Location of proposed site (red cross) showing local water courses and the Dodder Valley pNHA (purple line). From [www.epa.ie](http://www.epa.ie)**

The following areas were found to be located within the zone of influence of the application site:

Dodder Valley pNHA (site code: 0991)

Little information is available on the current status of features of conservation value at this site. A short site synopsis has been published and is reproduced here in full:

“This stretch of the River Dodder extends for about 2 kilometres between Firhouse bridge and Oldbawn bridge in the south-west of Dublin city.

The vegetation consists of woodland scrub mainly of Willow (*Salix* spp.), but up to 13 species of tree have been recorded. Understorey vegetation contains Early Purple Orchid (*Orchis mascula*) and Bugle (*Ajuga reptans*). Along the banks there are wild flower meadows with a good diversity of plant species. There is also a pond in the river bed at Firville which has flourished greatly since the floods of 1986.

Forty-eight species of bird have been recorded recently in the area including Little Grebe, Kingfisher, Dipper and Grey Wagtail. Part of the river bank supports a Sand Martin colony of up to 100 pairs.

This site represents the last remaining stretch of natural river bank vegetation of the Dodder in the built up Greater Dublin Area.” (NPWS, unknown year)

The web site of the National Biodiversity Data Centre ([www.biodiversityireland.ie](http://www.biodiversityireland.ie)) contains a mapping tool that indicates records of legally protected species within a selected Ordnance Survey (OS) 10km grid square. The proposed development site is located within the square O02 and no species of protected flowering plant are highlighted. It must be noted that this list cannot be seen as exhaustive as suitable habitat may be available for other important and protected species.

Water quality in rivers is monitored on an on-going basis by the Environmental Protection Agency (EPA). The proposed development site is located within the Poddle river system, which places it within the wider catchment of the River Liffey. Maps from the EPA show no water courses in the immediate vicinity of the development site. The River Poddle flows approximately 80m to the south. The direction of flow is towards the east, where Poddle ultimately joins the River Liffey in Dublin City centre. The River Poddle is assessed as ‘poor status’ under the Water Framework Directive reporting period 2015-2018 throughout its length.

The transitional waters of the Liffey Estuary Upper is ‘good status’ at the point where it meets the Poddle while the Liffey Estuary Lower and the marine area of Dublin Bay are also ‘good status’. These data are taken from the ENVision mapping tool on [www.epa.ie](http://www.epa.ie).

### **3.2 Plans or policies relating to natural heritage**

South Dublin Development Plan 2016 – 2022: Chapter 8 of this plan discusses Green Infrastructure while Chapter 9 looks at Heritage, Conservation and Landscapes, including natural heritage. Green Infrastructure is described as “waterways, wetlands, woodlands, wildlife habitats, greenways, parks and conservation lands, forests and other open spaces that adjoin and are threaded through urban areas”. It is an objective of the Plan to develop a Green Infrastructure strategy and a number objectives relate to the preservation and enhancement of existing features. G3 Objective 2 states that “biodiversity protection zone of not less than 10 metres from the top of the bank of all watercourses” will be preserved. While G3 Objective 4 is: “To uncover existing culverts and restore the watercourse to acceptable ecological standards and for the passage of fish, where possible”. With regard to developments such as the current proposal Policy HCL may be relevant and states:

It is the policy of the Council to protect and promote the conservation of biodiversity outside of designated areas and to ensure that species and habitats that are protected under the Wildlife Acts 1976 and 2000, the Birds Directive 1979 and the Habitats Directive 1992 are adequately protected.

It is supported by the following objectives:

HCL15 Objective 1: To ensure that development does not have a significant adverse impact on rare and threatened species, including those protected under the Wildlife Acts 1976 and 2000, the Birds Directive 1979 and the Habitats Directive 1992.

HCL15 Objective 2: To ensure that, where evidence of species that are protected under the Wildlife Acts 1976 and 2000, the Birds Directive 1979 and the Habitats Directive 1992 exists, appropriate avoidance and mitigation measures are incorporated into development proposals as part of any ecological impact assessment.

HCL15 Objective 3: To protect existing trees, hedgerows, and woodlands which are of amenity or biodiversity value and/ or contribute to landscape character and ensure that proper provision is made for their protection and management in accordance with Living with Trees: South Dublin County Council's Tree Management Policy 2015-2020.

### 3.3 Site Survey

Aerial photography from the OSI and historic mapping shows that this area has been within the built fabric of Tallaght for many decades. It lies on the edge of Dublin city, and lies close to busy transport links.

#### 3.3.1 Flora

The lands are divided in two with a northern section that is composed of **artificial surfaces – BL3** and is sealed with tarmac. The southern area is **recolonising bare ground – ED3** which is c.80% bare stones. Vegetation that has established is ruderal in nature or associated with small berms of soil to the west and south-east. Typical species are annual plants such as Colt's-foot *Tusilago farafara*, Willowherbs *Epilobium sp.*, Ragwort *Senecio jacobaea* and Field Horsetail *Equisetum arvense*. Perennials include Cock's-foot *Dactylis glomerata*, Brambles *Rubus fruticosus agg.* and occasional Gorse *Ulex europaeus*.

The southern boundary is characterised by a **hedgerow – WL2** which includes Hawthorn *Crataegus monogyna*, Brambles, Birch *Betula sp.*, Sycamore *Acer pseudoplatanus*, Alder *Alnus glutinosa* and some garden escapes, such as Cotoneaster *Cotoneaster sp.* and Periwinkle *Vinca minor*. Three-cornered Leek *Allium triquetrum* is growing in at least two locations to the south-east. This is an alien invasive species as listed in SI no. 477 of 2011. Using methodology from the Heritage Council this hedgerow is evaluated as 'lower significance' due to its short length, relatively low species diversity and lack of connections with wider landscape features (Foulkes et al., 2013).

These features are of low biodiversity value. There are no water courses on the site, no bodies of open water or habitats that can be described as wetlands.

### 3.3.2 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 1 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 1 – Protected mammals in Ireland and their known status within the O02 10km grid square<sup>1</sup>. Those that are greyed out indicate either that there are no records of the species from the National Biodiversity Data Centre.

Species	Level of Protection	Habitat <sup>2</sup>	
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	

<sup>1</sup> From the National Biodiversity Data Centre, excludes marine cetaceans

<sup>2</sup> Harris & Yalden, 2008

Daubenton's bat <i>Myotis daubentonii</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
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

Although a number of mammals are known to be present in this 10km, there are no habitats on the site which are suitable for the majority of these species. There was no evidence of Badger or deer activity. There is no suitable habitat for these species. There are no setts. There is no suitable habitat for Otter. There was no evidence that Irish Hare is present while habitat is not available for Pine Marten or Red Squirrel. Small mammals such as the Irish Stoat, Hedgehog and Pygmy Shrew are considered widespread in the Irish countryside, including on disused land in urban areas (Lysaght & Marnell, 2016). No direct evidence of any mammal was recorded although Fox *Vulpes vulpes* and Rabbit *Oryctolagus cuniculus* are common in Dublin along with Brown Rat *Rattus norvegicus*, House Mouse *Mus domesticus* and Field Mouse *Apodemus sylvaticus*. These species are not protected.

Features on the site are of very low suitability for roosting bats with little natural vegetation to provide foraging resources. There are no buildings and no large or old trees with potential roosting cavities (Hundt, 2013). A dedicated bat survey was carried out by Wildlife Surveys Ireland in May 2022 and this found that "bat activity on this site was low" and that "There are no roosts within the site". Two bats were noted: a Common Pipistrelle and a Leisler's Bat.

April lies within the optimal season for surveying breeding birds. Suitable nesting habitats is present in hedgerows and ruderal vegetation where there is suitable cover. Great Tit *Parus major*, Blackbird *Turdus merula*, Blue Tit *P. caeruleus* and Robin *Erithacus rubecula* were recorded to be nesting. These are all species of low conservation concern (green list) (Gilbert et al., 2021).

There are no suitable habitats for amphibians or fish.

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 on sites which are intensively farmed. Other protected invertebrates are confined to freshwater and wetland habitats and so are not present on this site.

### **3.4 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 artificial and highly modified land within a built-up area with a short stretch of 'lower significance' hedgerow. There are no examples of habitats listed on Annex I of the Habitats Directive or records of rare or protected plants. Three-cornered Leek is growing on the site and this plant is listed as alien invasive as per SI 477 of 2011. There are no locally high value habitats and features are of limited value even for common and widespread species.

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

Table 4 Evaluation of the importance of habitats and species on the proposed development site

Buildings and artificial surfaces – BL3 Recolonising bare ground – ED3	Negligible ecological value
Hedgerow – WL1	Local biodiversity value





Figure 2 – Site boundary and habitats

#### **4 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT**

The proposed development will see site clearance and a construction phase to include access roads, new homes, and all associated infrastructure as shown in figure 3. Post construction the land will be landscaped. The project is described thus, as per the planning application:

*(i) demolition of existing substation and removal of existing advertisement structure on site; (ii) construction of a residential development of 197 no. apartments (79 no. one-bedroom, 105 no. two-bedroom and 13 no. three-bedroom) in 4 no. blocks (ranging in height from seven to eight storeys with ninth floor level roof garden) as follows:*

- *Block A containing 41 no. apartments (6 no. one bedroom, 34 no. two bedroom and 1 no. three-bedroom) and measuring eight storeys in height (with ninth floor roof garden);*
- *Block B containing 79 no. apartments (33 no. one bedroom, 34 no. two bedroom and 12 no. three bedroom) and measuring eight storeys in height;*
- *Block C containing 42 no. apartments (24 no. one bedroom and 18 no. two bedroom) and measuring seven storeys in height; and,*
- *Block D containing 35 no. apartments (16. no one bedroom and 19 no. two bedroom) and measuring seven storeys in height.*

*(iii) all apartments will have direct access to an area of private amenity space, in the form of a balcony, and will have shared access to internal communal amenities including 2 no. resident lounges (114.7sq.m), gym (98sq.m) external communal amenity space (1,490.8sq.m) and public open space (1,667sq.m); (iv) provision of 78 no. vehicular parking spaces (including 3 no. car-share parking spaces, 4 no. mobility parking spaces, and 8 no. electric vehicle parking spaces), 4 no. set-down vehicular parking spaces (including 1 no. mobility parking space) and 348 no. bicycle parking spaces (including 100 no. visitor parking spaces) at ground floor/ground level accessible via new vehicular entrance gate off access road off Greenhills Road; (v) provision of 4 no. commercial units (871.5sq.m total) and 1 no. childcare facility (329.7sq.m) with associated external amenity space (168.8sq.m) located at ground floor level; and, (vi) all ancillary works including public realm/footpath improvements, landscaping, boundary treatments, internal footpaths/access roadways, bin storage, foul and surface water drainage, green roofs, removable solar panels, ESB substation and all site services, site infrastructure and associated site development works necessary to facilitate the development.*



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 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 artificial surfaces, recolonising bare ground and hedgerow. These are of negligible or low local biodiversity value. The impact of this loss to local plant and animal species is considered to be minor negative. The small stretch of hedgerow along the southern boundary is to be removed but new planting will be installed that will, in time, compensate for the loss of habitat. The overall impact to biodiversity will be minor negative in the short term, including to bats, and neutral in the medium to long-term.
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. The risk of this impact is moderate due to the presence of suitable nesting habitat. As birds' nests are protected in the Wildlife Act, this impact is potential moderate negative. The bat survey has confirmed that not roosts, or potential roost spaces, are available on the site so no impacts to bats can occur at this stage.
3. Pollution of water courses through the ingress of silt, oils and other toxic substances. There is no sensitive fisheries habitat adjacent to the site boundary, however silt can nevertheless be carried to the local water courses via the public surface sewer system. Although there is a lack of direct pathways to the Poddle/Liffey water courses, best practice mitigation measures should be employed.
4. Spread of alien invasive species  
Three-cornered Leek is listed in legislation and there is an onus upon the development to prevent its spread. Without mitigation this impact is moderate negative.

### **Operation Phase**

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

5. Pollution of water from foul wastewater arising from the development. Wastewater will be sent to the municipal treatment plant at Ringsend. Upgrade works are needed as the plant is not

currently meeting its requirements under the Urban Wastewater Treatment Directive. Pollution effects are most acute in freshwater systems where the capacity for dilution is low and the consequent risk of eutrophication is high. The Ringsend WWTP discharges into Dublin Bay which is currently classified as ‘unpolluted’ by the EPA despite long-running compliance issues at the plant. A separate screening report for Appropriate Assessment specifically examines the impacts of this project on Natura 2000 sites in Dublin Bay and found that no significant effects are likely to arise to these areas. Irish Water is to undertake upgrading works on a phased basis and that compliance issues will comprehensively addressed.

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. This will comprise of attenuation storage and SUDS principles, including attenuation tank, green roofs, permeable paving, petrol interceptors and controlled release to the surface water sewer. No negative effect arising to the quantity or quality of surface run-off will occur.
7. Artificial Lighting. According to the bat report:

*Lighting will be utilised for two different functions:*

*1) Access and safety and 2) Security and policing. The former is to allow ease of use at night. The latter is to ensure a perceived higher security level. This may affect light-intolerant bat species during foraging and if directed at emergence points would affect all bat species, even those that will feed in illuminated areas. Species such as common pipistrelle, Leisler’s bat (and neighbouring soprano pipistrelles) are less affected than almost all other Irish bat species. At worst, it would be a permanent moderately negative impact in the absence of mitigation.*

8. Protected Areas. No impacts are predicted to occur to the status of Dodder River Valley pNHA as there is no pathway to this area. Impacts to Natura 2000 sites (SACs or SPAs) in Dublin Bay 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.

Table 5: 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	Moderate negative – permanent impacts to species of high local value/or species with legal protection

3	Pollution of water during construction phase	Minor negative
4	Alien invasive species	Moderate negative
5	Wastewater pollution	Neutral
6	Surface water pollution	Neutral
7	Artificial lighting	Moderate negative
8	Protected areas	Neutral

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

## 5.2 Cumulative impacts

A number of the identified impacts can also act cumulatively with other impacts from similar developments in this area of Dublin. These primarily arise through the additional loading to the Ringsend Wastewater Treatment Plant. It is considered that this effect is not significant due to the planned upgrading works that will bring it in line with the requirement of the Urban Wastewater Treatment Directive.

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

## 6 AVOIDANCE, REMEDIAL AND MITIGATION MEASURES

This report has identified one moderate negative impact and therefore mitigation is needed to reduce the severity of this potential effect. One minor negative effect is also likely, and mitigation for this is also given in line with best practice standards.

### 6.1 Mitigation Measures Proposed

The following mitigation measures are proposed for the development

#### Construction Phase

##### 1: Habitat loss

New planting in areas to be landscaped should be focussed on native or other species which are of greater wildlife value.

2: Disturbance of birds' nests

Deliberate disturbance of a bird's nest is prohibited unless under licence from the National Parks and Wildlife Service. 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. With this mitigation in place no negative effects to water quality downstream are likely to occur.

3: Pollution during construction

Any loss of sediment from the site should be avoided. Any surface water leaving the site must first pass through a silt trap or detention basin. Dangerous or toxic substances, such as oils, fuels etc., should be stored in bunded areas only. These recommendations are in accordance with guidance from Inland Fisheries Ireland (2016).

With this mitigation in place no negative effects to water quality downstream are likely to occur.

4: Alien Invasive Species.

There is no standard methodology for the treatment of Three-cornered Leek. This should be treated with standard herbicide during the growing season. If soil is to be moved off site, the waste contractor must be informed of the potential for contamination. Once operational, the site should be surveyed during the appropriate season for the presence of Three-cornered Leek and further remedial action (i.e. additional herbicide treatment) taken as required.

5: Artificial lighting. The following mitigation is taken from the bat survey report:

*(1) Incorporation of bat boxes into the buildings.*

*4 x 2FR Schwegler bat tubes or 4 x Ans-6-bat boxes (as shown above shall be incorporated into the buildings to provide bat roost sites. These should be away from windows or balconies and the majority should face southerly to increase the likelihood of usage in summer. Boxes must be above 2.5 metres but may be placed at any point above this.*

*(2) Native shrubs and trees shall 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 – All-Ireland-Pollinator-Plan-2021-2025-WEB.pdf (pollinators.ie). (<https://pollinators.ie/wp-content/uploads/2021/03/All-Ireland-Pollinator-Plan-2021-2025-WEB.pdf>)*

*(3) Light spillage and light pollution shall be kept to a minimum with the use of cowls, caps,*

*and low-level bollard lighting where possible.*

*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);*

## **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.

No long-term negative impacts to biodiversity are predicted to arise from this development.

According to the bat survey report:

*There is no impact upon bat conservation predicted from the proposed construction. The mitigation, if implemented in full, will reduce any impacts to a short-term to medium term slight loss of feeding. The measures proposed will prevent impacts from lighting and from vegetation loss and from any potential roost loss. The incorporation of bat boxes into the building will provide long-term bat roost sites.*

## **8 MONITORING**

Monitoring is required where the success of mitigation measures is uncertain or where residual impacts may in themselves be significant. Monitoring will be required throughout the construction phase to ensure that pollution prevention measures are implemented. Monitoring will be required during the operational phase for the emergence of Three-cornered Leek.



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