

## SECTION 4: FLORA AND FAUNA

### 4.1 INTRODUCTION

This chapter of the Environmental Impact Statement has been prepared by Ms. Sinead McDonnell – an Environmental Scientist employed by John Barnett and Associates specialising in Ecological Studies, assisted by Stewart Wistow, consultant botanist and Dr. Paddy Ashe, consultant ecologist and entomologist.

#### **Field Survey**

A field survey of flora and fauna at the application site at Blackhall, Punchestown, Co. Kildare was carried out on the 15<sup>th</sup> October 2007. The objective of the survey was to identify and assess the significance of the flora and fauna occurring on or in the immediate vicinity of the site. Weather on the day was cool and overcast with intermittent short rain showers.

#### **Flora**

Although summer is considered the optimal time to carry out a vegetation survey, 2007 experienced an unseasonably warm autumn, resulting in many flora species still not having gone to seed, thus facilitating the assessment and identification of habitats on site.

#### **Fauna**

Summer is considered the optimal time for a fauna survey to be carried out, as during the autumn / winter period the numbers of invertebrate and mammalian fauna are limited since numerous species are dormant or hibernate in the colder weather. Mammal species are less active during autumn and therefore not as easily identifiable due to lack of tracks and scats. This is also the case for invertebrate species.

#### **Relevant Legislation**

Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (the EU Habitats Directive) and Council Directive 79/409/EEC on the conservation of wild birds (the EU Birds Directive) oblige member states to protect habitats and species that are of importance on a Europe-wide scale. Annex I and II of the Habitats Directive and Annex I of the Birds Directive list species and habitats that are of greatest conservation importance on an EU-wide scale and for which conservation areas must be designated. These designations are:

- Special Areas of Conservation (SAC) for habitats listed in Annex I of the Habitats Directive and species listed in Annex II. Some of these habitats or species are prioritised for conservation measures (\* Priority Species or Habitats) and
- Special Protection Areas (SPA) for Birds listed in Annex I of the Birds Directive

A number of other Annexes in both Directives list species that require strict protection but not necessarily require designation of conservation areas. Ireland is also a signatory to a number of conservation-related agreements and conventions such as the Bern and Bonn Conventions.

The EU Directives have been transposed into Irish law through a number of legal instruments including the *European Communities (Natural Habitats) Regulations 1997-2005* (the 'Habitat Regulations'), the *Wildlife Acts, 1976-2000*, the *Planning and Development Act, 2000*, and the *Foreshore Acts, 1932-1992*.

Other legal instruments such as the Wildlife Acts (1976 and 2000) and the Flora Protection Order (1999) also provide protection for species of national conservation importance. Proposed Natural Heritage Areas (pNHA) are conservation designated areas that protect species and habitats of regional and national importance. At a more local level there may be objectives set out in County Biodiversity Action Plans that identify species and habitats that are uncommon or rare within the county.

#### **Methodology for Assessment of Flora and Habitats**

The site was walked systematically while noting plant species and habitat types. All vascular plants observed during the survey were identified to species level. Identification and naming of vascular plants used Webb *et al.*(1996), Kent (1992) and Stace (2001). Habitat types were assigned to categories (and given codes) according to the Heritage Council classification system (Fossitt 2000). Habitat types were mapped, refer to Figure 4.1.

Information on sites of conservation importance (National Parks and Wildlife Service, various dates) for Kildare, the Irish Red Data Book for vascular plants (Curtis and McGough, 1988) and various texts such as Preston *et al.* (2002) were consulted during the report writing stage.

#### **Methodology for Assessment of Fauna**

The site was walked systematically and bird species were noted whenever encountered or clearly identifiable through calls or song. Signs of mammal activity including tracks and footprints, scats and burrows or other resting places were searched for as well as looking out for the mammals themselves and asking local people about any past sightings.

Invertebrates (e.g. bees & butterflies) were recorded from flowers or under stones etc. and any unusual species were noted.

Information on sites of conservation importance for Kildare (National Parks and Wildlife Service, various dates; members of Kildare Branch of BirdWatch Ireland), the Irish Red Data Book for vertebrates (Whilde 1993), various texts and websites were consulted during the report writing stage.

#### **Consultation Process**

The following individuals and organizations were consulted during the preparation of this section of the EIS

- Bridget Loughlin – Heritage Officer (Kildare County Council)
- National Park and Wildlife Service
- Birdwatch Ireland

## **4.2 RECEIVING ENVIRONMENT**

### **4.2.1 Habitats and Vegetation**

Habitats present on the quarry area are listed below. Seven main habitats were classified using Fossitt (2000) and they are as follows:

- Active Quarry – ED4
- Recolonising Bare Ground– ED3
- Improved Agricultural Grasslands – GA1
- Hedgerows – WL1
- Artificial Lakes and Ponds – FL8
- Buildings and Artificial Surfaces –BL3
- Adjoining Habitats

Table 4.1 lists the plant species found in these habitats.

Figure 4.1 provides a habitat characterisation map illustrating the distribution and types of habitats found on the site

#### **Active Quarry – ED4**

The application site at Blackhall is a former sand and gravel quarry and has only been partially restored. As a result that much of the site is classified for habitat mapping purposes as an active quarry. The colonization of flora and fauna is almost completely prevented around these areas, due to the continuous movement and erosion of soil etc. A few species have still managed to colonise the area such as Selfheal (*Prunella vulgaris*) and Groundsel (*Senecio vulgaris*).

Active quarries and mines are not listed in Annex 1 of the EU Habitat Directive. The location of this habitat is indicated on Figure 4.1.

#### **Recolonising Bare Ground – ED3**

This describes areas where bare or disturbed ground and artificial surfaces have been invaded by herbaceous plants. Areas along the majority of the onsite roads and the stretch of land from the southerly electricity pylon to the north-easterly boundary fit into this classification. The flora is predominately ruderals and weed species. Common examples include Ribwort Plantain (*Plantago lanceolata*), Silverweed (*Potentilla anserina*), Selfheal (*Prunella vulgaris*), Groundsel (*Senecio vulgaris*) and Germander Speedwell (*Veronica chamaedrys*).

Recolonising bare ground is not listed in Annex 1 of the EU Habitat Directives. The location of this habitat is indicated on Figure 4.1.

#### **Improved Agricultural Grasslands – GA1**

The former quarry at Blackhall supports three areas of partially improved agricultural grasslands to the north-east, south and west of the site. Although there appears to be a low level of management, the area is highly grazed, which has resulted in a large reduction in the species diversity and an increased representation of 'agricultural herbs'. Common examples include Dandelion (*Taraxacum agg.*), Common Nettle (*Urtica dioica*), Greater Plantain (*Plantago major*) and Creeping Buttercup (*Ranunculus repens*).

Improved agricultural grasslands are not listed in Annex 1 of the EU Habitat Directive. The location of this habitat is indicated on Figure 4.1.

#### **Hedgerows (WL1)**

Hedgerows form an almost continuous belt around the perimeter of the site. The majority of them are mature and unmanaged. Ditches and earth banks are associated with most of these hedgerows. The predominant canopy species are a mix of both native and introduced species such as Ash (*Fraxinus excelsior*), Hawthorn (*Crataegus monogyna*), Blackthorn (*Prunus Spinosa*), Sycamore (*Acer pseudoplatanus*) and Beech (*Fagus sylvatica*). The understorey vegetation supports a high proportion of spinose species such as Holly (*Ilex aquifolium*), bramble (*Rubus fruticosus agg.*) and Dog-rose (*Rosa canina*), in addition to species such as Bush Vetch (*Vicia sepium*), Cocksfoot (*Dactylis glomerata*) and Soft Shield Fern (*Polystichum setiferum*).

Hedgerows are not listed in Annex 1 of the EU Habitat Directive. The location of this habitat is indicated on Figure 4.1.

#### **Other Artificial Lakes and Ponds – FL8**

Situated to the north of the site, is a large groundwater pond which was most likely formed when the former working extended below the maximum seasonal groundwater level. It was not possible to survey this pond in great detail for safety reasons, but it did appear to support several species such as Water Horsetail (*Equisetum fluitans*), Jointed Rush (*Juncus articulatus*), Compact Rush (*Juncus conglomerata*) and Yellow Irish (Irish pseudocorus).

Artificial lakes and ponds are not listed in Annex 1 of the EU Habitat Directive. The location of this habitat is indicated on Figure 4.1.

#### **Buildings and Artificial Surfaces – BL3**

This describes areas that have been covered by artificial surfaces such as tarmac or cement, or where buildings are present. This constitutes the on-site roads and buildings found to the south-west of the site. Much of this area is sealed with a tarmacadam surface, which has limited ability to support vegetation communities. Some ruderals and weed species have still successfully colonised these areas, they include; Herb Robert (*Geranium robertianum*), Colts-foot (*Tussilago farfara*), etc.

Artificial surfaces are not listed in Annex 1 of the EU habitat Directives. The location of this habitat is illustrated in Figure 4.1.

#### **Adjacent Habitats**

The application site is predominately surrounded by improved agricultural lands, much of which is used for grazing. A large existing quarry, operated by Cemex Ireland Ltd., is located on the other side of the county road, immediately south west of the application site. Several residential dwellings are also located in the immediate vicinity of the application site. These habitats are not listed in Annex 1 of the EU Habitat Directives and their locations are indicated on Figure 4.1.

## **4.2.2 Fauna**

### **Birds**

A number of bird species were observed during the field work such as wrens (*Troglodytes troglodytes*), magpies (*Pica pica*), rooks (*Corvus frugilegus*), fieldfares (*Turdus pilaris*) and goldfinches (*Carduelis carduelis*). Table 4.2 provides a list of all bird species recorded at the site. Most of these species are common in rural agricultural and woodland habitats across Ireland.

### **Protected Mammals**

There are several wild mammals in Ireland protected under the Wildlife Act (1976 and 2000). During the site visit, the Irish hare (*Lepus timidus hibernicus*) was the only protected mammal observed. Badgers (*Meles meles*), pygmy shrew (*Sorex minutus*) and hedgehogs (*Erinaceus europeus*) have the potential to occur on this site and bats probably feed over the site but no likely roosting places occur within the site. Table 4.3 provides a list of all the species recorded at the site

### **Mammals Not Protected under Wildlife Legislation**

Although no other mammals were actually observed during the field survey, the evidence of foxes (*Vulpes vulpes*) was confirmed through the location and identification of their scat. Other mammals likely to occur but also not protected under legislation include; Rabbits (*Oryctolagus cuniculus*), Field mice (*Apodemus sylvaticus*) and Brown rats (*Rattus norvegicus*). Table 4.3 provides a list of all the species recorded at the site

### **Amphibians and reptiles**

No frogs, newts or lizards were recorded on site.

### **Invertebrates**

No invertebrates were observed during the site visit.

## **4.2.3 Evaluation**

### **Flora and Habitat**

Although habitats such as abandoned sand and gravel quarries, recolonising ground and artificial lakes and ponds constitute a large portion of the site, these habitats support little flora of interest and are of low conservational value.

The high proportion of concrete and tarmac found around the buildings and artificial surfaces has limited the diversity of flora within these areas and is thus considered to have no ecological significance. The improved agricultural grasslands have been heavily grazed which has resulted in a low level of biodiversity across these areas. The same can also be said for much of the adjacent land which is also used for agricultural purposes.

The hedgerows, which form an almost continuous belt around the perimeter of the site, are of a high conservation value. Over the years they have become biologically diverse and support a large range of both native and non-native floral species. Hedgerows serve several different functions for fauna. These include song posts, nesting sites, roosting site, feeding sites, cover from predators, and corridors for movement. Hedgerows are not protected under Annex 1 of the Habitat Directive, their statutory protection relates only to their value as a habitat for breeding birds which places restrictions on the timing of their removal. These hedgerows have a high ecological significance for this site and should be maintained insofar as possible.

### **Fauna**

No mammals, birds, amphibians or invertebrates of conservation value were recorded during the surveys. All song birds are protected under the Wildlife Acts (1976 and 2000). All the birds recorded on site are widespread throughout Ireland in rural locations.

### **Protected Sites**

There are no Special Protection Areas (SPA) or Special Areas of Conservation (SAC) located within 5km of the application which are protected by the EU Birds and Habitats Directives (specifically the *European Communities (Conservation of Wild Birds) Regulations (S.I. No. 285 of 1985)* and/or *European Communities (Natural Habitats) Regulations (S.I. No. 94 of 1997)*).

There is however, a Special Area of Conservation (SAC) and a Natural Heritage Area (NHA) located approximately 4km from the site at Red Bog, refer to Table 4.4. Red Bog is a wetland complex consisting of a lake, fen and bog, situated in a hollow between ridges of glacially deposited material and underlain by rocks of Ordovician age. The site supports a diverse range of flora and is considered of ornithological interest as it supports breeding birds such as Mute Swans, Mallards, Tufted Duck, Coot, Moorhen, Snipe and Black headed-gulls. The site has been chosen as a proposed NHA and candidate SAC due to the presence of transition mire which is an Annex I habitat under the Habitat Directive.

Due to separation distance and the relatively limited scale of the existing restoration / recovery activities at the application site, it is considered that the continued operation of the site would be highly unlikely to have any effect on the Redbog SAC site.

#### 4.3 IMPACT OF THE RESTORATION SCHEME

##### 4.3.1 Relevant Aspects of Scheme

Continued backfilling using naturally occurring inert materials and waste recovery activities at the former sand and gravel quarry will give rise to the following impacts within the application area:

- Removal of approximately 11.75 hectares of partially improved agricultural grassland
- Removal of approximately 16.5 hectares of bare recolonising ground
- Removal of approximately 1.5 hectares of existing groundwater ponds
- Establishment of 29.75 hectares of improved agricultural grasslands

##### 4.3.2 Operational Phase Impacts

The following impacts will arise during the restoration works at the applications site :

- i. Backfilling of the existing void space and the improved agricultural grassland to the south and west of the application site will alter the landscape character and disturb flora and fauna that have colonised these areas.
- ii. Removal of existing groundwater ponds at the floor of the former sand and gravel quarry will result in the loss of wetland habitat which may support wintering birds and breeding birds during the summer periods
- iii. Placement and compaction of inert soils in close proximity to hedgerows may temporarily and locally reduce potential foraging and shelter habitat for both mammals and birds.
- iv. The removal of partially restored grasslands as restoration works proceed, will result in the temporary loss of mostly poor habitat that is presently colonised by flora and fauna.
- v. Reductions in potential foraging habitat for mammals, as areas utilised by them are removed and filled as part of the proposed site restoration works.
- vi. The creation of berms during the quarry expansion, in time, would lead to increased foraging and nesting habitats for common species of song bird as these berms began to be recolonised by flora.
- vii. As backfilling works are completed, the site will be progressively restored to agricultural pasture lands. This will be in keeping with the surrounding area which is composed predominately of improved agricultural land. This process will result in the former sand and gravel quarry being returned to its original land use.

##### 4.3.3 Indirect Impacts

Dust deposition could occur as an indirect impact of the placement, spreading and compaction of the naturally occurring inert materials. This could potentially have a negative impact on flora in the area if foliage were to become covered in excessive levels of dust, potentially reducing the amount of photosynthesis taking place.

Tables 4.5, 4.6 and 4.7 identify the nature, significance and duration of these impacts on the flora and fauna within the application area.

#### 4.4 MITIGATION MEASURES

It is recommended that the following program of mitigation measures be implemented to eliminate and minimise the impact of the development on the flora and fauna of the site:

- i. in order to retain landscape connectivity and minimise loss of potential nesting sites for birds, it is recommended that existing boundary hedgerows be retained and reinforced where necessary. Retention and reinforcement of boundary hedgerows will also serve as a noise and visual barrier.
- ii. to ensure the continued survival of boundary hedgerows, the existing 10m buffer zone between the hedgerows and the infilling works should be maintained insofar as practicable. Backfilling and restoration operations in close proximity to existing hedgerows should also be of minimum duration possible.
- iii. where removal of any shrubs or hedgerows within the site is required, these works shall take place between the months of September and March to avoid the bird nesting season.
- iv. the loss of internal shrubs or hedgerows within the site should be compensated by re-planting following restoration of site to pre-extraction ground levels.
- v. any new planting should comprise a mixture of native tree and shrub species consistent with species readily found in the local area.
- vi. the mitigation measures set out in Chapters 7 and 8 of this Environmental Impact Statement should be implemented. Dust and noise emissions from the application site will comply with the recommended DoEHLG (2004) and EPA (2000) emission limit values. Implementation of these measures shall ensure that there will be minimal adverse indirect noise and dust impacts on flora and fauna arising from backfilling, recycling and restoration operations.
- ix. following the completion of backfilling operations, the application site will be restored to improved agricultural grassland. This will ensure that land use at the site is in keeping with the character of the surrounding area.

Provided that all the mitigation measures proposed above are implemented, the overall impact of the proposed development on flora and fauna over the operational phase is classified as a *minor negative* impact. In the longer-term, post completion of site restoration, the overall impact of the scheme is considered to be a *neutral to minor positive* impact.

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[www.epa.ie](http://www.epa.ie)

[www.kildarecoco.ie](http://www.kildarecoco.ie)

[www.birdwatchireland.ie](http://www.birdwatchireland.ie)

**TABLES**

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## FLORA

Field Maple	Acer campestre
Sycamore	Acer pseudoplatanus
Yarrow	Achillea millefolium
Creeping Bent	Agrostis stolonifera
Wild Angelica	Angelica sylvestris
Cow Parsley	Anthriscus sylvestris
Lesser Burdock	Arctium minus (aggregate)
Daisy	Bellis perennis
Hard Fern	Blechnum spicant
Slender Thistle	Carduus tenuiflorus
Creeping Thistle	Cirsium arvense
Spear Thistle	Cirsium vulgare
Pignut	Conopodium majus
Hazel	Corylus avellana
Hawthorn	Crataegus monogyna
Crested Dog's-tail	Cynosurus cristatus
Cock's-foot	Dactylis glomerata
Rosebay Willowherb	Epilobium angustifolium
Beech	Fagus sylvatica
Common Cudweed	Filago vulgaris
Wild Strawberry	Fragaria vesca
Ash	Fraxinus excelsior
Cleavers	Galium aparine
Herb-Robert	Geranium robertianum
Ground Ivy	Glechoma hederacea
Ivy	Hedera helix
Hogweed	Heracleum sphondylium
Hawkweed	Hieracium sp. (aggregate)
Holly	Ilex aquifolium
Yellow Iris	Iris pseudacorus
Jointed Rush	Juncus articulatus
Compact Rush	Juncus nserine ate
Nipplewort	Lapsana communis
Meadow Vetchling	Lathyrus pratensis
Wild Privet	Ligustrum vulgare
Black Medick	Medicago lupulina
Common Poppy	Papaver rhoeas
Hart's-tongue Fern	Phyllitis scolopendrium
Ribwort Plantain	Plantago lanceolata
Greater Plantain	Plantago major
Soft-shield Fern	Polystrichum setiferum
Silverweed	Potentilla nserine

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Creeping Cinquefoil	Potentilla reptans
Cowslip	Primula veris
Selfheal	Prunella vulgaris
Wild Cherry	Prunus avium
Blackthorn	Prunus spinosa
Pedunculate Oak	Quercus robur
Meadow Buttercup	Ranunculus acris
Creeping Buttercup	Ranunculus repens
Dog-rose	Rosa canina
Bramble	Rubus fruticosus
Common Sorrel	Rumex acetosa
Broad-leaved Dock	Rumex obtusifolius
Elder	Sambucus nigra
Common Ragwort	Senecio jacobaea
Groundsel	Senecio vulgaris
Prickly Sow-thistle	Sonchus asper
Common Chickweed	Stellaria media
Snowberry	Symphoricarpos albus
Dandelion	Taraxacum sp. (aggregate)
Hop Trefoil	Trifolium campestre
Red Clover	Trifolium pratense
White Clover	Trifolium repens
Colt's-foot	Tussilago farfara
Bullrush	Typha latifolia
Gorse	Ulex europaeus
English Elm	Ulmus procera
Common Nettle	Urtica dioica
Germander Speedwell	Veronica chamaedrys
Tufted Vetch	Vicia cracca
Bush Vetch	Vicia sepium
Common Dog-violet	Viola riviniana

**Table 4.1 Flora Species Listing (68 species)**

### BIRDS

Blackbird	Turdus merula	R & B
Blue Tit	Parus caeruleus	R & B
Chaffinch	Fringilla coelebs	R & B
Fieldfare	Turdus pilaris	WV
Goldfinch	Carduelis carduelis	R & B
Great Tit	Parus major	R & B
Grey Heron	Ardea cinerea	R & B
Jackdaw	Corvus monedula	R & B
Magpie	Pica pica	R & B
Mallard	Anas platyrhynchos	R & B
Meadow Pipit	Anthus pratensis	R & B
Pied Wagtail	Motacilla alba	R & B
Redwing	Turdus iliacus	WV
Robin	Erithacus rubecula	R & B
Rook	Corvus frugilegus	R & B
Wren	Troglodytes troglodytes	R & B
Wood Pigeon	Columba palumbus	R & B

R = resident, B = breeding, WV = winter visitor.

**Table 4.2 Bird Species Listing**

### FAUNA

Fox	Vulpes Vulpes
Irish Hare	Lepus timidus

**Table 4.3 Fauna Species Listing**

Site	Site Code	Description	Designation	Approx. Distance
Red Bog	000397	Fen/Lake	SAC/NHA	4km

**Table 4.4 Nature Conservation Designations within 5km of Site**

Potential Impacts of Continued Activity	Nature of Impact		
	Positive	Neutral	Negative
Removal of Topsoil		X	
Removal of Recolonising Ground			X
Initial Backfilling			X
Re-colonisation of Backfilled Surface	X		
Reduction of Foraging / Nesting Habitat			X
Reduction of Foraging Habitat for Mammals			X
Dust Deposition			X
Increased Noise		X	
Final Restoration	X		

**Table 4.4 Nature of Ecological Impact**

Potential Impacts of Continued Activity	Significance of Impacts				
	Neutral	Minor	Moderate	Major	Severe
Removal of Topsoil		X			
Removal of Recolonising Ground			X		
Initial Backfilling			X		
Re-colonisation of Backfilled Surface			X		
Reduction of Foraging/Nesting Habitat		X			
Reduction of Foraging Habitat for Mammals		X			
Dust Deposition		X			
Increased Noise		X			
Final Restoration				X	

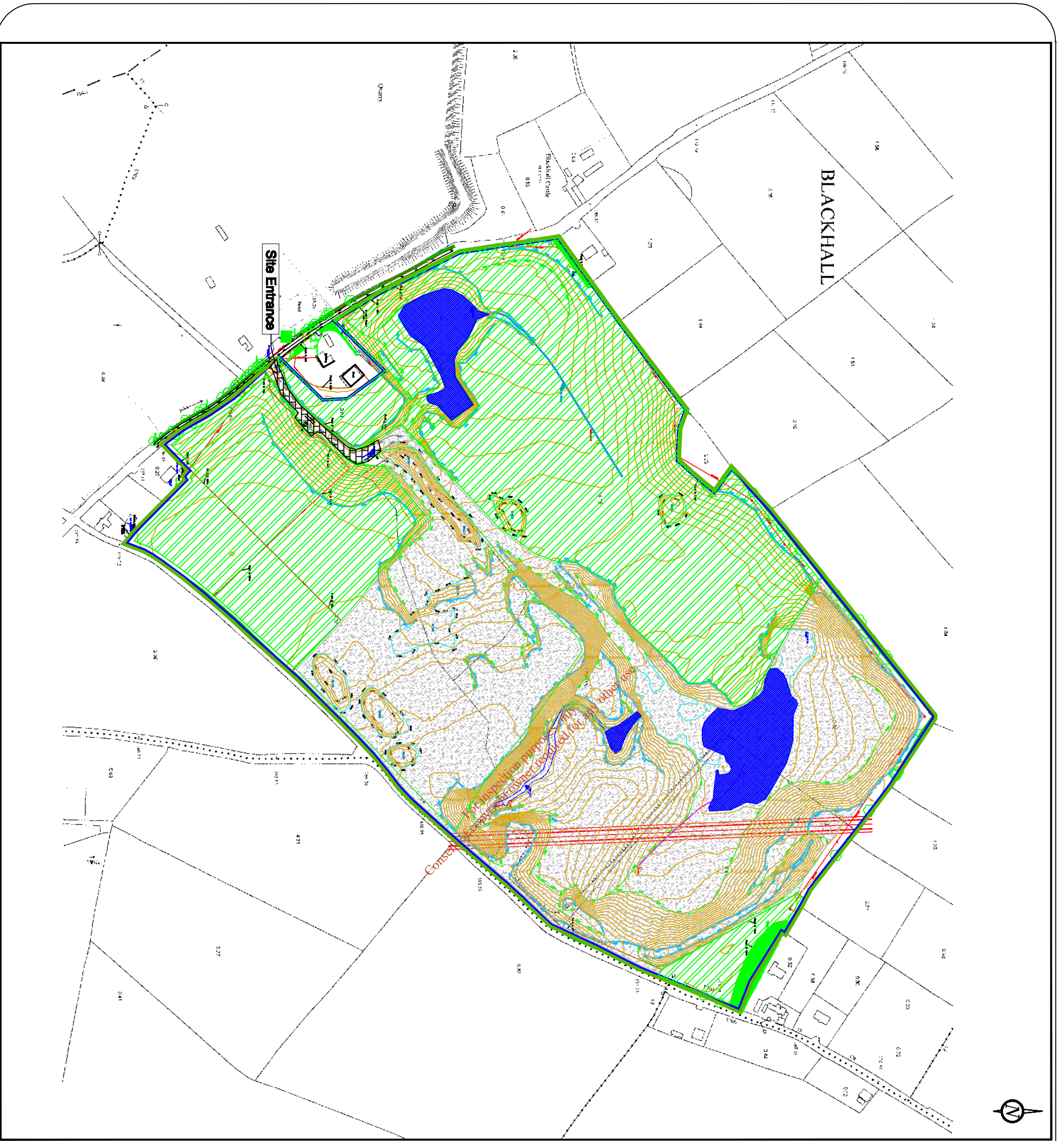
**Table 4.5 Significance of Ecological Impact**

Potential Impacts of Continued Activities	Duration of Impacts			
	Short term	Medium term	Long term	Permanent
Removal of Topsoil	X			
Removal of Recolonising Ground		X		
Initial Backfilling	X			
Re-colonisation of Backfilled Surface				X
Reduction of Foraging/Nesting Habitat		X		
Reduction of Foraging Habitat for Mammals		X		
Dust Deposition		X		
Increased Noise		X		
Final Restoration				X

**Table 4.6 Duration of Ecological Impact**

**FIGURES**

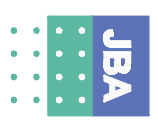
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- Legend**
- Land Interest (c. 35.8ha)
  - Waste Licence Area
  - Hedgerow
  - Improved Grasslands
  - Wet Lands
  - Artificial Surfaces
  - Recontouring & Bare Ground

Topographic Survey Update: August 2007  
**Scale 1:4,000**  
 0m      75m      300m

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**JOHN BARNETT & ASSOCIATES**  
 7 DUNDUM BUSINESS PARK  
 WINDY ARBOUR  
 DUBLIN 14

**Site:** Blackhall, Punchestown, Naas, Co. Kildare

**Title:** Habitat Map

**Drawn:** TP/PMC      **Scale:** 1:4,000

**Job No:** 3746      **Date:** March 2008

**Figure 4**