



## 4.0 BIODIVERSITY

### 4.1 Introduction

Golder Associates Ireland Limited ('Golder') has been commissioned by GCHL ('the Client') to produce an Environmental Impact Assessment Report (EIAR). This Biodiversity chapter of the EIAR has been prepared by Golder, and is informed by an Appropriate Assessment Screening produced by Roger Goodwillie & Associates in February 2017 (presented in Appendix 4.1) and the most up to date Appropriate Assessment Screening produced by Golder in 2018 (Golder, 2018).

This chapter considers the potential effects upon biodiversity of the proposed restoration works (as described in Chapter 2.0) at a former quarry site in the townland of Ballinderry, Co. Kildare ('the Site'). The aim of this chapter is to identify the key ecological receptors in the vicinity of the Site, determine their ecological value, assess the potential impacts of the scheme upon them and propose mitigation to offset any residual impacts.

#### 4.1.1 Relevant Legislation and Policy Context

This assessment has been completed with regard to the following legislation, policy documents and guidance:

##### National and International Legislation

- The Planning & Development Act 2000 & the Planning and Development (Amendment) Act, 2010 (as amended) hereafter referred to as the Planning Acts;
- The Wildlife Act 1976 as amended by the Wildlife (Amendment) Act, 2000 (as amended) hereafter referred to as the Wildlife Acts;
- European Communities (Environmental Impact Assessment) Regulations 1989 to 2001;
- European Commission (EC) Habitats Directive 92/43/EEC (as amended);
- EC Birds Directive 2009/147/EC;
- European Communities (Birds and Natural Habitats) Regulations 2011 (as amended) hereafter referred to as the Birds and Habitats Regulations;
- Flora (Protection) Order, 2015;
- Environment (Miscellaneous Provisions) Act 2015;
- The Fisheries (Consolidation) Act 1959; and
- The Local Government (Water Pollution) Act, 1977 (as amended by Sections 3 and 24 of the 1990 Act).

##### Relevant Policies and Plans

- National Biodiversity Action Plan 2017-2021;
- Ireland's National Strategy for Plant Conservation; and
- Kildare County Development Plan 2017-2023.

##### Relevant Guidance

- Invasive Species in Ireland (NPWS, 2004);
- Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal (Chartered Institute of Ecology and Environmental Management, 2nd Edition, 2016);
- Advice Notes on Current Practice (in preparation of Environmental Impact Statements) (Environmental Protection Agency, 2003);
- Advice Notes for Preparing Environmental Impact Statements (Draft) (EPA, 2015);
- Guidelines on the information to be contained in Environmental Impact Statements (EPA, 2002);



- Revised Guidelines on the information to be contained in Environmental Impact Statements (Draft) (EPA, 2017);
- Environmental Impact Assessment of National Road Schemes – A Practical Guide (NRA, 2008);
- Guidelines for Assessment of Ecological Impacts of National Road Schemes (NRA, 2009a);
- NRA Environmental Assessment and Construction Series Guidelines (NRA, 2006- 2009a);
- Bat Surveys: Good Practice Guidelines (Collins, 2016);
- Bats & Lighting Guidance Notes for Planners, engineers, architects and developers (Bat Conservation Ireland, December 2010);
- Bats in Buildings Guidance Notes for Planners, engineers, architects and developers (Bat Conservation Ireland, December 2010);
- Bat Mitigation Guidelines for Ireland (NPWS, 2006); and
- Bat Mitigation Guidelines (English Nature, 2004).

### 4.2 Incorporated Design Mitigation

The measures described in this section are assumed to form an integral part of the proposals that have been incorporated at the design stage. These comprise a number of measures that follow generic best practice are proposed to mitigate the impacts of the proposed development on the ecological environment at the Site:

- All Site activities will be undertaken in accordance with the CIRIA (2015) '*Environmental Good Practice on Site*' (4<sup>th</sup> edition); and
- Any vegetation clearance will be undertaken outside of the bird nesting season (March to August inclusive). If there is a necessity for vegetation clearance within this period, a suitably qualified ecologist must carry out a series of nesting bird checks in advance of any works to ascertain breeding activity in affected areas.

### 4.3 Assessment Methodology

#### 4.3.1 Baseline Method

Baseline data was captured through both desk-based study and an on-site survey. Robust baseline data was captured during the Appropriate Assessment Screening completed in February 2017 (G. F. Parker & Associates, 2017). This was verified by a Site walkover completed by Golder in February 2018 and has been supplemented by a desk-study. An updated Appropriate Assessment Screening was produced by Golder (Golder, 2018) to reflect changes to the proposed restoration strategy; this has also been used to inform this chapter as part of the desk-study.

A number of data sources were consulted for the desktop study:

- NPWS website ([www.npws.ie](http://www.npws.ie));
- EPA website ([www.envision.ie](http://www.envision.ie));
- National Biodiversity Data Centre (<http://www.biodiversityireland.ie/>);
- Water Framework Directive Ireland ([www.wfdireland.ie](http://www.wfdireland.ie)); and
- Botanical Society of Britain and Ireland (<http://bsbidb.org.uk/maps/>).



The desk-study element captured data regarding statutory and non-statutory designated sites, including Natura 2000 sites<sup>1</sup>, Natural Heritage Areas (NHAs), proposed Natural Heritage Areas (pNHAs) and Nature Reserves. A study area of 15 km was used to identify statutory and non-statutory sites.

4.3.2 Impact Assessment Method

Habitats and species were assessed in accordance with the guidance contained in the document 'Guidelines for Ecological Impact Assessment in the UK and Ireland' (CIEEM, 2016), which recommends that the value of an ecological resource be determined within a defined geographical context.

**Defining importance:** The relative importance of each ecological feature has been defined on a geographical scale, from international importance, to having relevance only in the context of the Site boundary. It should be noted that professional judgement has been employed in the allocation of a level of importance to each feature as it occurs on the Site. In other words, the value of the feature is presented in the context of its actual status within the Site. Therefore, a single individual of a species which is protected under the EU Habitats Directive would not automatically be of European (international) Importance, but would be evaluated in the context of its relationship to the overall population. The criteria for assessing importance are presented in Table 4.1.

Table 4.1: Criteria for Establishing Receptor Sensitivity / Importance

Table with 2 columns: Importance and Ecological Valuation. Rows include International, National, Regional, Local/County, and Local categories with detailed descriptions of protected sites and species.

**Defining impact:** The impacts to ecological features are defined by their geographical significance in terms of the likely effect and the defined importance of the feature being affected. It is not possible in this system to have an impact greater than the overall geographical importance of the feature (e.g. the maximum possible impact to a feature of regional importance would be one which is of regional significance).

Impacts which do not have significance beyond the immediate area (the Site) will be managed through the implementation of construction and habitat management plans. One exception to this is the case of impacts on Protected Species, where any impact would result in the implementation of mitigation measures.

<sup>1</sup> Sites of international importance, including Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Ramsar sites, are collectively known as Natura 2000 sites. These sites contain examples of some of the most important natural and semi-natural ecosystems in Europe.



**Defining Magnitude of Change:** Considering the potential for impacts as defined above, the magnitude of change is assessed. This is summarised in the Table 4.2 and relies on professional subjective judgement in deciding the level of magnitude of change.

**Table 4.2: Criteria for Assessing Magnitude of Change**

Impact Levels	Description
Severe Impact	Ecological effects of a scale or magnitude that would result in permanent, total loss of an irreplaceable species or habitat of international or national importance (occasionally of local importance), or that would result in the substantial loss of a protected/rare habitat or a population of a protected/rare species. They represent key factors in the decision-making process. Typically, mitigation measures would be unlikely to remove such effects.
Major Impact	These effects are likely to relate to permanent impacts at a regional or local level, or temporary impacts at an international or national level, and could be potential concerns to the project depending upon the relative importance attached to the issue during the decision-making process. The effects are likely to be large in scale or magnitude, and result in substantial medium term loss of protected/rare species or habitats. Mitigation and detailed design work are unlikely to eliminate all ecological effects.
Moderate Impact	These effects are usually only at local or regional level, and may be short or medium term only, or temporary impacts on a small part of an international site. However, the cumulative effects of such issues may lead to an increase in the overall effect on ecological features. They represent issues where effects will be experienced, but mitigation measures and detailed design work may ameliorate/enhance some of the consequences upon affected interests, but some residual effects will still arise.
Minor Impact	These effects are likely to be local issues only; or small magnitude impacts at the regional and national level. They are usually temporary, and are unlikely to be of importance in the decision-making process. However, they are of relevance in enhancing the subsequent design of the development and consideration of mitigation measures.
Not Significant / No Impact	No perceivable impacts on ecological features (habitat or species). Impacts may be beneath levels of perception, within normal bounds of variation, within the margin of forecasting error, or impacting on exceptionally poor baseline conditions.
Beneficial / Positive Impact	These effects are those that, through implementation, would be anticipated to benefit the ecology of the Site. They may advance the conservation objectives of local, national or international species or habitats.

**Outlining mitigation, compensation and enhancement measures:** Receptors subject to significant impacts (i.e. those that have the potential to affect the ecological resource outside of the immediate Site boundary) are the focus for the provision of mitigation measures. These mitigation measures have been formulated according to the mitigation hierarchy (avoid, reduce/minimise, compensate). All proposed mitigation measures follow industry best practice. Those for protected species follow the prescribed regulatory protocols.

**Defining residual impact:** Following the application of mitigation measures, impacts to each ecological feature is reassessed, and any residual impacts are reported. As stated by the CIEEM (2016), *'the value or potential value of a feature/receptor should be determined within a defined geographical context'*. Accordingly, each feature has been assessed based on the scale described in Table 4.2.

## 4.4 Baseline Ecology

### 4.4.1 Habitats and Species

The following habitats (Fossitt, 2000) were observed at the Site during the 2017 Site walkover:

- ED1 – Exposed sand, gravel and till;
- ED2 – Spoil or bare ground;
- ED3 – Recolonising bare ground;



- FL2 – Acid oligotrophic lake; and
- FS1 – Reed and large sedge swamp.

These observations were verified by a Site walkover and high level habitat mapping exercise completed by Golder on 5 February 2018. Following Golder's Site walkover, it was noted that the area south and east of the Site access road, which is a protected monument, has not been disturbed during sand and gravel extraction and so has been recorded as GS1 (neutral grassland). The presence of a third small pond was also noted in the south-west corner of the Site; this area had been identified by the EIS produced prior to extraction (Declan Brassill & Company Ltd, 2002) as an area of wetter ground. It has been recorded as FL8 (artificial pond) as an area of potentially flooded quarry workings, although it is noted that it is only occasionally wet, reflecting natural fluctuations in the amount of surface water at the Site. No additional water quality sampling of the ponds was undertaken to verify the acid oligotrophic conditions identified in 2017 (Roger Goodwillie & Associates, 2017). The results of the Golder walkover and habitat mapping exercise are presented indicatively in Figure 4.1.



Figure 4.1: Fossitt Habitat Types Recorded at the Site

As described in the 2017 Appropriate Assessment Screening (Roger Goodwillie & Associates, 2017), a large proportion of the Site is covered by exposed sand and gravel or by bare earth/spoil. Some of this exposed or bare earth is beginning to be colonised by plants, including Bilbao fleabane *Conyza floribunda*. All trees present on the Site are small and generally immature. Where overburden has been stored, the rate of colonisation has been greater and so vegetation is denser and generally more diverse, including species such as cocksfoot *Dactylis glomerata*, scutch grass *Elytrigia repens*, ribwort plantain *Plantago lanceolata* and glaucous sedge *Carex flacca*. A detailed list of species identified is provided in the AA screening report (Roger Goodwillie & Associates, 2017), which is presented in Appendix 4.1. No invasive plant species were noted during either walkover survey. A stream is recorded adjacent to the eastern boundary of the Site.



The boundaries of the Site are delineated for long stretches by hedgerows, comprising hawthorn *Crataegus monogyna*, elder *Sambucus nigra* and ash *Fraxinus excelsior*.

Field visits also assessed presence of fauna species and the availability of suitable habitat for fauna species. The presence of rabbit *Oryctolagus cuniculus* and fox *Vulpes vulpes* was noted during the 2017 field visit (Roger Goodwillie & Associates, 2017), but no evidence of other terrestrial mammals was recorded during either visit. It is considered that the Site does not provide favourable habitat for bats as it is open and treeless.

The 2017 Appropriate Assessment Screening (Roger Goodwillie & Associates, 2017) also records a number of bird species commuting across the Site, including wood pigeon *Columba palumbus*, rook *Corvus frugilegus*, jackdaw *Corvus monedula* and magpie *Pica pica*. A small colony of sand martin *Riparia riparia* was also noted nesting at the Site, along the north facing sediment slopes along the south of the larger pond. A total of 30 pairs were noted. During the 2018 walkover, a number of mute swans *Cygnus olor* were observed on the larger pond, near the reedbed.

### 4.4.2 Statutory and Non-statutory Designated Nature Conservation Sites

Designated sites within 15 km of the Site comprise:

- Mount Hevey Bog SAC (Site Code – 2342) (also a pNHA);
- The River Boyne and River Blackwater SAC (Site Code – 2299);
- The Long Derries, Edenderry SAC (Site Code – 0925) (also a pNHA);
- Ballynafagh Lake SAC (Site Code – 1387) (also a pNHA);
- Carbury Bog NHA (Site Code – 1388);
- Black Castle Bog NHA (Site Code – 0570);
- Hodgestown Bog NHA (Site Code – 1393); and
- Molerick Bog NHA (Site Code – 1582).

The nearest designated site is Carbury Bog NHA, located approximately 2.9 km south of the Site. The nearest Natura 2000 site is the River Boyne and River Blackwater SAC, which is approximately 5.9 km north of the Site.

There are six non-statutory nature conservation sites within 15 km of the Site, all of which are pNHAs (this excludes three pNHAs referred to above that are statutorily designated as SACs). The six non-statutory sites comprise:

- Ballina Bog pNHA;
- Rathmoylan Esker pNHA;
- Donadea Wood pNHA;
- Ballynabarny Fen pNHA;
- Royal Canal pNHA; and
- Grand Canal pNHA.

The closest of these to the Site, Ballina Bog pNHA, is approximately 1.5 km north east of the Site.

The locations of all designated sites, statutory and non-statutory, relative to the Site are shown in Figure 4.2.

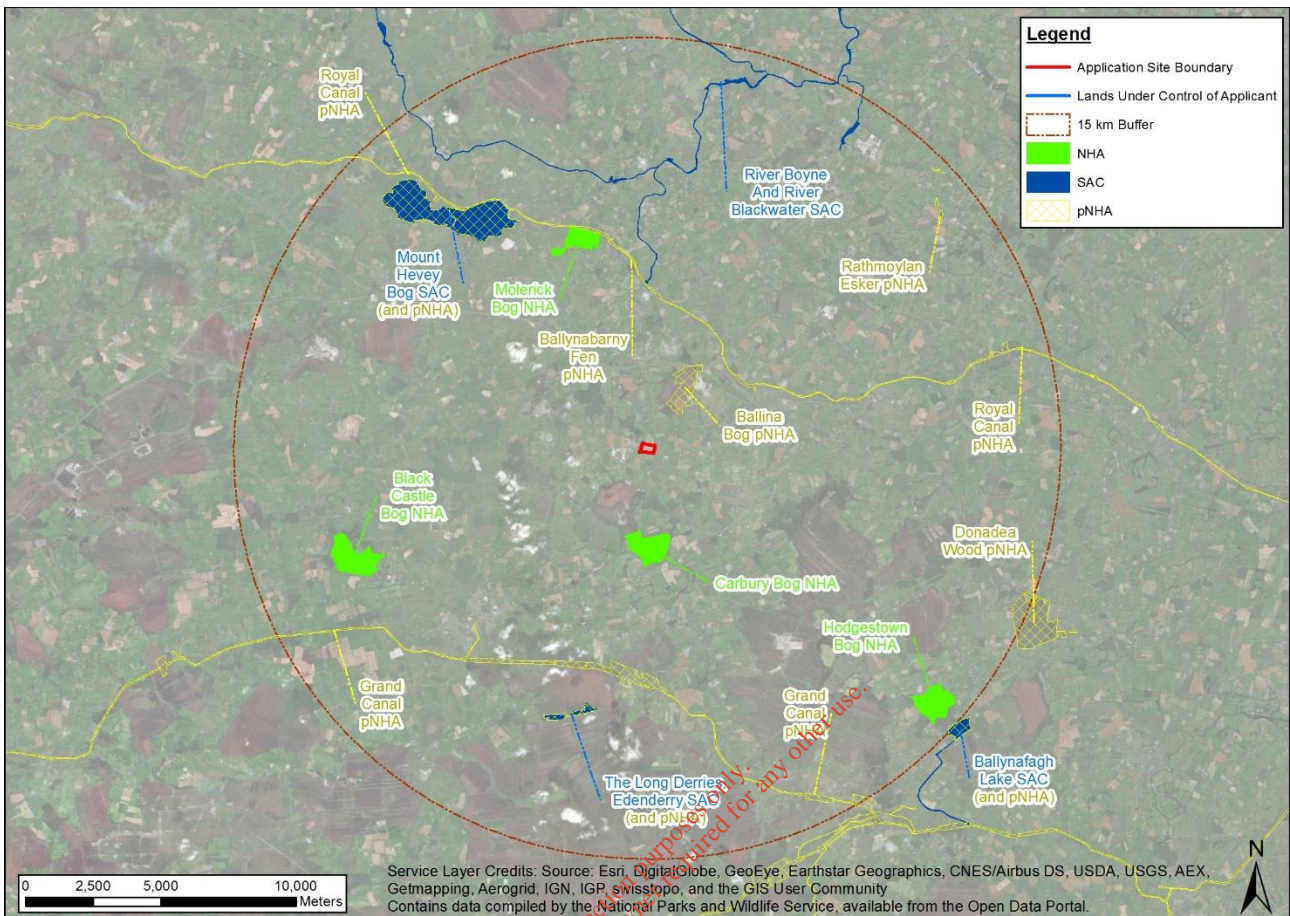


Figure 4.2: Designated Nature Conservation Sites within 15 km of the Site

### 4.4.3 Aquatic Habitat and Connectivity to Designated Sites

#### Water Framework Directive

In response to the increasing threat of pollution and the increasing demand from the public for cleaner rivers, lakes and beaches, the EU developed the Water Framework Directive (WFD). This Directive is unique in that, for the first time, it establishes a framework for the protection of all waters including rivers, lakes, estuaries, coastal waters and groundwater, and their dependent wildlife/habitats under one piece of environmental legislation for all European member states. The WFD (Directive 2000/60/EC) is a substantial piece of EU water legislation that came into force in 2000. The overarching objective of the WFD is for the water bodies in Europe to attain Good or High Ecological Status. The Environment Protection Agency (EPA) is the competent authority in Ireland responsible for delivering the WFD. River Basin Management Plans (RBMP) have been created which set out measures to ensure that water bodies in the country achieve 'Good Ecological Status'. Good Ecological Quality will depend on the quality of the individual quality elements on which the Ecological status is scored; namely the Biological, chemical and morphological condition in a particular water body. Any reduction in any of these elements will result in a reduction of the overall ecological status.

#### On and Off Site Receptors

As described in the Water chapter (Chapter 6.0), the Site is located within the Eastern River Basin District and falls within the WFD catchment area for the River Boyne. The eastern edge of the Site is bounded by the River Glash and the Balrinnet Stream runs within 100 m of the western Site boundary (which flows north to act as a tributary to the River Glash). The River Glash continues to flow north until its eventual confluence with the River Boyne, approximately 6.5 km downstream of Site. The River Boyne continues to flow north-east, eventually discharging into the Irish Sea.

There are three on-site ponds located within the footprint of the Site; Ponds A, B and C, as shown on Figure 2.3 in Chapter 2.0. Pond A is considered to comprise of surface water, intermittently noted as 'dry'.



Ponds B and C are located in the deepest areas of mineral extraction and are considered to be primarily groundwater fed, but also act as a runoff / drainage sink for surface waters at the Site. A surface water drain is located along the southern edge of the Site, but it is noted to be consistently dry. Given the well-drained nature of superficial deposits within the area of the Site, there are no other significant drainage features within the immediate vicinity of the Site.

### Surface Water Body Status

It is detailed in the Water chapter (Chapter 6.0) that the Balrinnet stream and upper River Glash to the north-east of the Site was attributed WFD 'Poor' status by the EPA for both the 2010-2012 and 2010-2015 periods. Downstream areas of the River Glash and in the area where it joins the River Boyne both show an improvement to 'Moderate' rating, with the River Boyne being classified as "Good" further downstream, near Boleykeogh.

Biological surface water quality data available from the EPA for their station at Clonuff Bridge (downstream of the Site, where the Balrinnet stream discharges into the River Glash, see Figure 6.1) reported a quality value (Q) rating of 2-3 in 2015, which represents 'moderately polluted' water. Historically, the water has typically been reported with a quality rating 3, both prior to and during extraction activities, showing little to no impact by the Site on stream quality. Downstream Q values at Ashfield Bridge (following the confluence of River Glash with River Boyne) show an improvement to a 3-4 rating, indicating 'slight pollution'.

### Groundwater Body Status

The Water chapter (Chapter 6.0) explains in detail that the groundwater flow in this region is controlled by the topography and the underlying glacio-fluvial Sand and Gravel and bedrock geology. The footprint of the Site is located upon the River Boyne ('Kilrathmurray') Gravels which are considered to be a locally important 'Lg' sand and gravel aquifer, and from which gravel extraction at the Site has occurred. Groundwater flow is dominated by intergranular primary flow mechanisms and has potential for high yields. The aquifer is considered to be 'good' by the WFD.

### Connectivity to Designated Sites

An assessment of potential affects upon Natura 2000 sites is provided in the Appropriate Assessment Screening (Golder, 2018). This screening exercise concluded that, as the Mount Hevey Bog SAC is a raised bog that is rainwater fed and is hydrologically isolated and distinct from the Site, it would be unaffected by the proposed restoration works. The Long Derries esker SAC is similarly raised and so is not in continuity with groundwater. The Ballynafagh Lake SAC is also hydrologically isolated from the Site. As such, it is expected that these SACs will remain unaffected by the proposed restoration works.

The Appropriate Assessment Screening also concludes that, although potentially connected to the Site via the Balrinnet stream (via groundwater), the River Boyne and River Blackwater SAC will remain unaffected by the proposed activities. This conclusion is based on the results of the water impact assessment (including the assumed good practice measures described therein; Chapter 6.0,) which highlights the fact that water quality in the Balrinnet stream/River Glash has remained the same ('moderately polluted') before and during excavation activities at the Site when mobile plant and machinery that are similar to those that will be used during restoration have been present on Site, and considers that the proposed restoration scheme is not anticipated to result in any changes to water quality (i.e. inert waste soil will be used to restore to pre-excavation levels).

The habitats and species for which the River Boyne and River Blackwater SAC has been designated are not present at the Site either permanently or as any part of their life-cycle.

The four NHAs recorded within 15 km of the Site are all raised bogs and are hydrologically isolated from the Site. As such, there are no impacts expected upon designated sites as a result of the proposed restoration works and they are not considered further.

#### 4.4.4 Flora and Fauna Assessment (Desk Study)

The National Biodiversity Data Centre holds some records of protected and notable species within the desk study search area (2 km grid square – N63Z). In terms of protected species, badger, otter and fallow deer have been recorded in this grid square within the last 10 years. These freely available desk study results should not be considered definitive data sets for the desk study area. An absence of desk study data does not necessarily indicate that a site is absent of notable flora or fauna.





**4.4.5 Flora Assessment**

There were no Flora Protection Order (FPO) species recorded during the field survey.

**4.4.6 Fauna Assessment**

The presence, or potential presence, of species on the Site was identified from the desk study and site surveys. Table 4.3 lists the species that are considered likely to occur within the Site, on the basis of the presence of suitable habitat and/or the occurrence of recent records in the vicinity. The species, together with its legislative designation is listed.

The source(s) of information relating to each species could include:

- Existing records from desk study;
- Presence of suitable habitat identified during the site survey; and / or
- Direct observation.

For each species with the potential to occur on Site, Table 4.3 presents a brief summary of the status of the species in relation to the Site itself. If the survey fails to record the species and the habitats are unsuitable, then it is concluded that the species is unlikely to occur and it is not considered further within the assessment.

**Table 4.3: Status of potential receptors (fauna) at the proposed works site**

Species/Group	Status	Summary of status on site
<b>Badger</b>	Wildlife Acts (1976 – 2010)	None observed and most recent record dates to 2011. A sett was removed from the northern hedgerow under in conjunction with Dúchas during the development of the Site (Declan Brassill & Company Ltd, 2002). The hedgerows around the Site periphery are suitable for foraging and hedgerows may be suitable for sett building.
<b>Fox</b>	Wildlife Acts (1976 – 2010)	Presence on Site identified during 2017 field visit (Roger Goodwillie & Associates, 2017).
<b>Rabbit</b>	-	Presence on Site identified during 2017 field visit (Roger Goodwillie & Associates, 2017).
<b>Otter</b>	Wildlife Acts (1976 – 2010) – EU Habitat Directive.	Records indicate presence in area, but considered unlikely to occur within the Site owing to sub-optimal aquatic resource for this species. Not considered further.
<b>Deer</b>	Wildlife Acts (1976 – 2010)	Records indicate presence in area, but habitats on Site are considered unlikely to support these species. Not considered further.
<b>Small Mammals (e.g. Stoat, Hedgehog, Red Squirrel, Pygmy Shrew)</b>	Wildlife Acts (1976 – 2010)	No records in vicinity of Site. Habitats on Site are poor and considered unlikely support these species. Not considered further.
<b>Bats</b>	Wildlife Acts (1976 – 2010) – EU Habitat Directive.	No records in vicinity of Site. Habitats on Site are poor and considered unlikely support these species. Not considered further.
<b>Birds</b>	Wildlife Acts (1976 – 2010), EU Birds Directive, Birds of Conservation Concern (BoCC <sup>2</sup> ,	Sand martins were observed nesting and breeding at the Site and swans were observed using the pond. Breeding birds may also occur in areas of hedgerow vegetation, which provide good cover. Birds were seen commuting over the Site, but the habitats available on Site are largely

<sup>2</sup> Colhoun, K. & Cummins, S. (2013) Birds of Conservation Concern in Ireland 2014–2019. Irish Birds 9: 523–544.



Species/Group	Status	Summary of status on site
	Ireland).	considered unsuitable for foraging/nesting.
<b>Aquatic Fauna (Salmonids)</b>	Wildlife Acts (1976 – 2010) – EU Habitat Directive.	Ponds are fed by rainwater and groundwater, and so there is limited connectivity with nearby surface water features from which salmonid and other fish fry could enter the ponds. Conditions in the two large ponds are acidic oligotrophic (nutrient poor), which are unsuitable for salmonids and are typically species poor. The smaller pond is only wet intermittently. Not considered further.
<b>Other Taxa</b>	Lepidoptera / Odonata	Habitats on Site are poor and considered unlikely support these species. Not considered further.

**4.4.7 Invasive Species**

No invasive or alien species were found on site during the site surveys.

**4.5 Impact Assessment**

Impacts associated with the proposed development are considered to be short term disturbance, transition or loss of habitats and species. In the long term, habitats on site will transition toward a predominantly terrestrial environment returned to traditional agricultural use, which may provision elements of species-richness associated with field margins and increased provision of hedgerows. The retention of the smaller pond in the south-west corner of the Site will continue to provide an area of aquatic habitat on Site.

**4.5.1 Evaluation**

The evaluation of ecological features (habitats and species) that could be affected by the Project proposals is presented in Tables 4.4 and 4.5.

**Table 4.4: Geographical Importance of Key Ecological (Habitat) Features and Rationale**

Key Ecological Features	Importance/Impact	Rationale
<b>Hedgerow</b>	Local	This habitat represents a valuable resource for birds, and breeding birds in particular, as well as foraging habitat for badger. No hedgerows are proposed to be altered or removed. This feature is not considered further.
<b>Neutral grassland</b>	Local	This habitat is widely available in the surrounding area and, as the area is a protected monument, it will not be impacted by the proposed restoration works. This feature is not considered further.
<b>Artificial pond</b>	Local	This habitat is intermittently dry, influenced by natural variations in surface water at the Site. This area will not be impacted by the proposed restoration works. This feature is not considered further.
<b>Acid oligotrophic ponds</b>	Local	This habitat is sub-optimal and of limited ecological value. This feature is not considered further.
<b>Exposed sand, gravel and till</b>	Local	Habitat is of limited ecological value. This feature is not considered further.



Key Ecological Features	Importance/Impact	Rationale
Bare ground/spoil	Local	Habitat is of limited ecological value. This feature is not considered further.
Recolonising bare ground	Local	Habitat is of limited ecological value. This feature is not considered further.

**Table 4.5: Classifying the Geographical Importance of Key Ecological (Species) Features**

Key Ecological Features	Importance/Impact	Rationale
Badger	Local	The hedgerows around the periphery of the Site provide suitable foraging habitat, although the majority of the Site is unsuitable. The hedgerows will not be altered or removed as part of the proposed restoration works. This feature is not considered further.
Breeding Birds	Local	The hedgerows around the periphery of the Site provide suitable foraging and nesting habitat, although the majority of the Site is unsuitable. The sheer slopes and 'cliffs' around the edge of the ponds, with their exposed fine grained sand, provide nesting habitat for sand martins, although this habitat is widely available on adjacent land. The reed beds provide nesting habitat for waterfowl.
Foxes and rabbits	Local	Evidence of use of the Site by rabbits and foxes is reported in the 2017 Appropriate Assessment Screening. Habitats available on-site are sub-optimal for these species.

**4.5.2 Breeding Birds**

The proposed restoration would result in a loss of nesting habitat for sand martins (fine grained sand slopes) and wildfowl (reed bed). Suitable alternative habitat is available in the vicinity, and so it is considered that a loss of habitat within the Site will be not significant on local populations of these species in the wider area. As such, the favourable conservation status of this group will be maintained at the local scale. Indeed, the creation of additional terrestrial habitat that will support greater species richness will likely provide more suitable foraging habitat for these species and therefore have a slight beneficial impact.

**4.5.3 Foxes and Rabbits (and other small mammals)**

The proposed restoration would result in an increase in suitable foraging habitat for foxes and rabbits. There is suitable foraging habitat in the immediate vicinity, and the restoration works will eventually provide improved habitat for these species. In the short term, these species may be disturbed and forced to forage elsewhere, although this impact is considered to be not significant. In the longer term, it is likely that these species will experience a slight beneficial impact.

**4.6 Mitigation, Compensation and Enhancement Measures**

Assuming that the Incorporated Design Mitigation (as described in Section 4.2) and the mitigation measures proposed for protecting water quality (as described in Chapter 6.0) are adhered to, specific ecological mitigation measures will be limited to on-site habitat management and sympathetic scheduling of infilling activities, so as to avoid the bird nesting season.

**4.6.1 Habitat Management and Sympathetic Scheduling**

Removal of the reed bed should be completed outside of the bird nesting season (March to August inclusive). Once removed, reeds should be prevented from re-establishing until the pond has been completely infilled and work in that area is complete.



Where disturbance of the bare ground/spoil and recolonising bare ground is due to occur as part of the proposed restoration, vegetation should be prevented from becoming established until works are complete. This can be achieved through regular vegetation clearance (avoiding the bird nesting season).

Where infilling of the larger pond is due to occur near the recorded sand martin nests, this should be scheduled to occur outside the bird nesting season so as to avoid disturbing this species.

### 4.7 Residual Impacts

Residual ecological impacts are those that remain once the development proposals have been implemented. The main aim of ecological mitigation, compensation, and enhancement is to minimise or eliminate residual impacts. The works at the proposed Site are not expected to have any residual impact on the surrounding environment, including statutory protected sites.

Final restoration of the Site will include returning the land to agriculture. The cumulative effect of these restoration measures would likely result in a net (long term) positive gain for biodiversity at the Site.

### 4.8 Cumulative Impacts

As the proposed restoration works will likely have a positive impact upon biodiversity at the Site and will be reverting land-use at the Site to its pre-extractive conditions, it is considered that there will be no cumulative impacts as a result.

### 4.9 Conclusion

The Site has been shown to hold limited ecological potential, primarily providing habitat for breeding birds (in particular, sand martins). Loss of this habitat is ameliorated by the presence of suitable habitat on adjacent land and is countered by the long term positive effect on biodiversity that the restoration works are likely to provide.

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### 4.10 References

- Collins, J. (2016) Bat Survey - Good Practice Guidelines. Bat Conservation Trust, London.
- Declan Brassill & Company Ltd. (2002). Ballinderry EIS.
- EPA (2014) EPA Maps. Available online: <http://gis.epa.ie/Envision>. Accessed 2018.
- European Union Habitats Directive (1992). Council Directives 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora.
- Flora (Protection) Order (1999). Statutory Instrument, S.I. No. 94 of 1999. Published by the Stationery Office, Dublin.
- Fossitt, J. A. (2000) A Guide to Habitats in Ireland. The Heritage Council, Dublin.
- Golder Associates. (2018). Appropriate Assessment Screening Ballinderry Restoration. 1894029.R01.AA.B.0.
- Kildare County Council (2017) Kildare County Development Plan 2017-2023.
- National Biodiversity Data Centre (2014). Live Maps. Available online: <http://maps.biodiversityireland.ie/#/Map>. Accessed May 2018.
- National Parks and Wildlife Service (2014). Protected Sites. Available online: <http://www.npws.ie/protectedsites>. Accessed May 2018.
- Roger Goodwillie & Associates. (2017). Restoration of quarry at Ballinderry, Carbury, Co Kildare: Appropriate assessment screening.

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# APPENDIX A

## 4.1

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Restoration of quarry at Ballinderry,

Carbury, Co Kildare

**Appropriate assessment screening**

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Report prepared for G.F. Parker & Associates

February 2017

## 1. INTRODUCTION

The purpose of this report is to examine the possible ecological impacts of the proposed development on the Natura 2000 site network, the Special Areas of Conservation and Special Protection Areas so far designated.

The report is written by Roger Goodwillie, a member of the Chartered Institute of Ecology and Environmental Management. It follows the outline of the NPWS Guidance document (DoEHLG 2009) and begins with a short description of the site and its ecological value based on a visit in February 2017.

## 2. HABITATS & VEGETATION

The site is a worked out sand quarry lying below and south of the L5004 road at Clonuff Bridge. It is oblong in shape and consists of two ponds surrounded by extensive areas of gravel at different levels, with overburden stored at the western end and along the southern edge. Much of the habitat is disturbed ground with exposed sand, gravel or till (ED1 in Fossitt 2000), spoil and bare ground (ED2) where there is a little plant colonisation and recolonising bare ground where vegetation has mostly covered the piles of overburden. Both ponds are artificial lakes and ponds (FL2) while there is a reed and large sedge swamp (FS1) at the western end of the larger pond. These habitats may be picked out on the aerial photograph (at end).

### Bare ground

While there are piles of unvegetated gravel, most of the bare ground is beginning to be colonised by plants, most notably Bilbao fleabane *Conyza floribunda*. This is an introduced species but one that multiplies quickly with windborne seeds. There are other species too, for example

<i>Medicago lupulina</i>	black medick
<i>Agrostis capillaris</i>	common bent
<i>Tussilago farfara</i>	coltsfoot
<i>Trifolium dubium</i>	yellow trefoil
<i>T.pratense</i>	red clover
<i>Achillea millefolium</i>	yarrow
<i>Epilobium parviflorum</i>	hoary willowherb
<i>Tripleurospermum inodorum</i>	scentless mayweed
<i>Crepis vesicaria</i>	hawksbeard
<i>Reseda luteola</i>	dyer's rocket
<i>Buddleja davidii</i>	butterfly bush
<i>Betula pubescens</i>	downy birch
<i>Salix cinerea</i>	grey willow

The trees in general are small and seldom over 1m.



In places there are traces of richer soils supporting sow thistle *Sonchus oleraceus*, dog daisy *Leucanthemum vulgare*, creeping thistle *Cirsium arvense* or ragwort *Senecio jacobaea* but these are rare on the overall site.

### Vegetated ground

Once there is overburden present there is considerably more vegetation and also more diversity. The drainage is poor through compaction though there are dry sections also, particularly along the southern side. Here cocksfoot *Dactylis glomerata*, scutch grass *Elytrigia repens*, ribwort plantain *Plantago lanceolata* and glaucous sedge *Carex flacca* form an open grassland with additional species such as

<i>Chamerion angustifolium</i>	rose-bay
<i>Hypericum tetrapterum</i>	square-stemmed St John's wort
<i>Rumex obtusifolius</i>	broad-leaved dock
<i>Equisetum arvense</i>	field horsetail
<i>Rubus fruticosus</i>	bramble
<i>Crataegus monogyna</i>	hawthorn
<i>Heracleum sphondylium</i>	hogweed

Overburden west of the pond often has a moss cover of *Funaria*, *Bryum* and *Barbula* species as well as *Calliergonella cuspidata* and *Pseudoscleropodium purum*. Hard rush *Juncus inflexus* is more noticeable, often with

<i>Juncus articulatus</i>	jointed rush
<i>J. effusus</i>	soft rush
<i>Carex flacca</i>	glaucous sedge
<i>Phleum pratense</i>	timothy
<i>Cirsium palustre</i>	marsh thistle
<i>Potentilla reptans</i>	cinquefoil
<i>Lotus corniculatus</i>	birdsfoot trefoil
<i>Centaurium erythraea</i>	centaury
<i>Ranunculus acris</i>	meadow buttercup
<i>Lathyrus pratensis</i>	meadow vetchling
<i>Carex caryophylla</i>	spring sedge
<i>C. hirta</i>	hairy sedge

The site finishes at the hedge along the western boundary – a line of overgrown hawthorn *Crataegus monogyna*, elder *Sambucus nigra* and a little ash *Fraxinus excelsior* with abundant bramble *Rubus fruticosus* and ivy *Hedera helix*.

The aerial photograph shows a brownish area extending back from the NW corner of the pond, around a large pile of gravel. This represent the drainage from higher ground to the west and former washings and is largely a stand of great horsetail *Equisetum telmateia* with some hard rush *Juncus inflexus* and Yorkshire fog *Holcus lanatus*. Field horsetail *Equisetum arvense* is mixed in in places and as the pond is approached variegated horsetail *E. variegatum* becomes common. Through this there are some 3m willows (*Salix cinerea* and a little *S. viminalis* and *S. alba*).



General view of site from overburden at west end



Reed bed at corner of main pond

The horsetails lead into the reed bed that is maintained by fluctuations in water level of the main pond. Bulrush *Typha latifolia* is the dominant species and there is a little sharp-flowered rush *Juncus acutiflorus*, bog cotton *Eriophorum angustifolium* and water speedwell *Veronica anagallis-aquatica*. The pond itself support a thin growth of stoneworts *Chara* sp.

## 2.1 Fauna

The fauna includes rabbit and fox but there was no evidence of deer or badger, There would be no use by bats as the habitat is too open and treeless.

No birds were seen on the site visit except large species flying overhead – woodpigeon, rook, jackdaw and magpie. However, there is a small colony of sand martin (30prs) with burrows in fine, north-facing sediment south of the larger pond.

## 2.2 Evaluation

The site is typical of an abandoned quarry set in neutral or slightly calcareous gravels. It contains many of the expected species and is developing some interesting habitats though there is still a lot of sediment exposed.

The gradually shelving corner of the main pond and the ‘valley’ to the west is unusual in its abundance of horsetails and holds the uncommon *Equisetum variegatum*. This species is called ‘occasional’ in Parnell and Curtis (2012) but has a centre of distribution in the eastern Central Plain (BSBI data).

Otherwise the small sand martin colony is the only feature of interest as this is an amber-listed bird of conservation concern (Colhoun & Cummins 2013). It occurs in quarries wherever there is suitable fine-grained sediment that will hold its burrows and colonises new areas rapidly.

# 3. APPROPRIATE ASSESSMENT

## 3.1 Introduction

Appropriate assessment was introduced by the EU Habitats Directive as a way of determining during the planning process whether a project is likely to have a significant effect on one of the Natura 2000 sites so far designated (i.e. the candidate SAC’s and SPA’s), or their conservation objectives. In this case the only sites within 15km (see map at end) are Mt Hevey Bog (Site Code 2342), the headwaters of the River Boyne and River Blackwater (Site Code 2299) and the Long Derries esker, Edenderry (Site Code 0925). Carbury Bog to the south is a National Heritage Area (Site Code 1388).

Article 6(3) states

*Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or*

projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives....

In the Irish context this has been interpreted as a four stage process. Firstly a screening exercise (Stage 1, this document) determines if a project could have significant effects on a Natura site. If it does or the situation is unclear a Natura Impact Statement (Stage 2) is provided to the planning or regulatory authority which then conducts an assessment of the information supplied. Examples of significant effects are a loss of habitat area, fragmentation of the habitat, disturbance to species using the site and changes in water resources or quality. If such negative effects come to light in the assessment, alternative solutions are investigated by the proponent (Stage 3) and modifications made unless the project is deemed to be driven by 'imperative reasons of overriding public interest' in its current form. In this case Stage 4 then deals with compensatory action.

### 3.2 Project description

The project is the restoration of the quarry as a wildlife and agricultural area. The main pond and reed bed will be left intact and a wetland habitat created on level ground in the SE corner, fed by natural drainage. The western end of the site will be restored to grassland with a hedge separating it from the rest. Much of the material is on site already but clean soil would also be imported from excavations elsewhere.

### 3.3 Natura 2000 sites

As mentioned there are three Natura sites and one NHA within 15km. They are

Mt Hevey Bog SAC (Site Code 2342)  
River Boyne and River Blackwater SAC (Site Code 2299)  
Long Derries esker, Edenderry SAC (Site Code 0925)  
Carbury Bog NHA (Site Code 1388)

The two bogs are raised bogs which are fed by rainwater and from which water flows outwards. Therefore their link with a watercourse is one of supply; they are sealed from groundwater effects by a marl layer. The esker is similarly out of contact with ground- or surface water, being raised above the general level of the land.

The river site is the only one at potential risk from quarry and other groundworks. Its site synopsis is included below and lists features of interest, both habitats and species, that justify its selection as a candidate SAC. In summary these are

- Alkaline fens [7230]
- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) [91E0]
- River lamprey (*Lampetra fluviatilis*) [1099]
- Salmon (*Salmo salar*) [1106]
- Otter (*Lutra lutra*) [1355]

### 3.4 Conservation objectives (NPWS website)

## River Boyne and River Blackwater SAC

Objective: To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected, i.e.

- [1099] *Lampetra fluviatilis*
- [1106] *Salmo salar* (only in fresh water)
- [1355] *Lutra lutra*
- [7230] Alkaline fens
- 91EO \* Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*)

The favourable conservation condition of a species is achieved when:

- population data on the species concerned indicate that it is maintaining itself
- the natural range of the species is neither being reduced or likely to be reduced for the foreseeable future
- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

Favourable conservation condition of a habitat is achieved when:

- its natural range, and area it covers within that range, is stable or increasing,
- the ecological factors that are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and
- the conservation status of its typical species is favourable.

### 3.5 Likely effects

There are no likely effects from this development on the Natura sites within 15km.

Run-off is contained on site by the major pond to which drainage water flows and there is sufficient sediment to filter any outflows to groundwater. The River Glash at the eastern end is largely isolated from the site and there is no direct inflow. It discharges to the Boyne 6.5km downstream near Longwood.

The site does not support any of the features listed as special interests of the Boyne site so cannot act as a reservoir area to repopulate them in case of need.

## 4. CONCLUSION

The proposed development will not have a significant negative effect on any of the habitats or species listed as special conservation interests for the River Boyne and River Blackwater SAC or on those for any other Natura 2000 site. Neither will it compromise any of their conservation objectives.

This being the case there is no possibility of cumulative effects and a second stage AA is not required.

## References

Colhoun, K. & Cummins, S. (2013). Birds of conservation concern in Ireland 2014-2019. *Irish Birds* 9, 523-544

Fossitt, J.A. (2000) *A guide to habitats in Ireland*. Heritage Council.

Dept of Environment, Heritage and Local Government (2009). *Appropriate assessment of plans and projects in Ireland: guidance for planning authorities*. Dublin.

NPWS (2016) Conservation objectives for River Boyne and River Blackwater SAC [002299]. Generic Version 5.0. Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.

Parnell, J. & Curtis, T. (2012). *Webb's an Irish flora*. Cork University Press.

## SITE SYNOPSIS

### RIVER BOYNE AND RIVER BLACKWATER cSAC

**SITE CODE: 002299**

This site comprises the freshwater element of the River Boyne as far as the Boyne Aqueduct, the Blackwater as far as Lough Ramor and the Boyne tributaries including the Deel, Stoneyford and Tremblestown Rivers. These riverine stretches drain a considerable area of Meath and Westmeath and smaller areas of Cavan and Louth. The underlying geology is Carboniferous Limestone for the most part with areas of Upper, Lower and Middle well represented. In the vicinity of Kells Silurian Quartzite is present while close to Trim are Carboniferous Shales and Sandstones. There are many large towns adjacent to but not within the site. Towns both small and large, include Slane, Navan, Kells, Trim, Athboy and Ballivor.

The site is a candidate SAC selected for alkaline fen and alluvial woodlands, both habitats listed on Annex I of the E.U. Habitats Directive. The site is also selected for the following species listed on Annex II of the same directive – Atlantic Salmon, Otter and River Lamprey.

The main areas of alkaline fen are concentrated in the vicinity of Lough Shesk, Freehan Lough and Newtown Lough. The hummocky nature of the local terrain produces frequent springs and seepages which are rich in lime. A series of base-rich marshes have developed in the poorly-drained hollows, generally linked with these three lakes. Open water is usually fringed by Bulrush (*Typha latifolia*), Common Club-rush (*Scirpus lacustris*) or Common Reed (*Phragmites australis*) and this last species also extends shorewards where a dense stand of Great Fen Sedge or Saw Sedge (*Cladium mariscus*) frequently occurs. This in turn grades into a sedge and grass community (*Carex* spp., *Molinia caerulea*) or one dominated by the Black Bog-rush (*Schoenus nigricans*). An alternative direction for the aquatic/terrestrial transition to take is through a floating layer of vegetation. This is normally based on Bogbean (*Menyanthes trifoliata*) and Marsh cinquefoil (*Potentilla palustris*). Other species gradually become established on this cover, especially plants tolerant of low nutrient status e.g. bog mosses (*Sphagnum* spp.). Diversity of plant and animal life is high in the fen and the flora, includes many rarities. The plants of interest include Narrow-leaved Marsh Orchid (*Dactylorhiza traunsteineri*), Fen Bedstraw (*Galium uliginosum*), Cowbane (*Cicuta*

virosa), Frogbit (*Hydrocharis morsus-ranae*) and Least Bur-reed (*Sparganium minimum*). These species tend to be restricted in their distribution in Ireland. Also notable is the abundance of aquatic Stoneworts (*Chara* spp.) which are characteristic of calcareous wetlands.

The rare plant, Round-leaved Wintergreen (*Pyrola rotundifolia*) occurs around Newtown Lough. This species is listed in the Red Data Book and is protected under the Flora Protection Order, 1999, and this site is its only occurrence in Co. Meath.

Wet woodland fringes many stretches of the Boyne. The Boyne River Islands are a small chain of three islands situated 2.5 km west of Drogheda. The islands were formed by the build up of alluvial sediment in this part of the river where water movement is sluggish. All of the islands are covered by dense thickets of wet, Willow (*Salix* spp.) woodland, with the following species occurring: Osier (*S. viminalis*), Crack Willow (*S. fragilis*), White Willow (*S. alba*), Purple Willow (*Salix purpurea*) and Grey Willow (*S. cinerea*). A small area of Alder (*Alnus glutinosa*) woodland is found on soft ground at the edge of the canal in the north-western section of the islands. Along other stretches of the rivers of the site Grey Willow scrub and pockets of wet woodland dominated by Alder have become established, particularly at the river edge of mature deciduous woodland. Ash (*Fraxinus excelsior*) and Birch (*Betula pubescens*) are common in the latter and the ground flora is typical of wet woodland with Meadowsweet (*Filipendula ulmaria*), Angelica (*Angelica sylvestris*), Yellow Iris, Horsetail (*Equisetum* spp.) and occasional tussocks of Greater Tussock-sedge (*Carex paniculata*).

The dominant habitat along the edges of the river is freshwater marsh - the following plant species occur commonly here: Yellow Flag (*Iris pseudacorus*), Creeping Bent (*Agrostis stolonifera*), Canary Reed-grass (*Phalaris arundinacea*), Marsh Bedstraw (*Galium palustre*), Water Mint (*Mentha aquatica*) and Water Forget-me-not (*Myosotis scorpioides*). In the wetter areas of the marsh Common Meadow-rue (*Thalictrum flavum*) is found. In the vicinity of Dowth, Fen Bedstraw (*Galium uliginosum*), a scarce species mainly confined to marshy areas in the midlands, is common in this vegetation. Swamp Meadow-grass (*Poa palustris*) is an introduced plant which has spread into the wild (naturalised) along the Boyne approximately 5 km south-west of Slane. It is a rare species which is listed in the Red Data Book and has been recorded among freshwater marsh vegetation on the banks of the Boyne in this site. Other records for this species are from sites in Cos. Monaghan and Sligo.

The secondary habitat associated with the marsh is wet grassland and species such as Tall Fescue (*Festuca arundinacea*), Silverweed (*Potentilla anserina*), Creeping Buttercup (*Ranunculus repens*), Meadowsweet (*Filipendula ulmaria*) and Meadow Vetchling (*Lathyrus pratensis*) are well represented. Strawberry Clover (*Trifolium fragiferum*), a plant generally restricted to coastal locations in Ireland, has been recorded from wet grassland vegetation at Trim. At Rosnaree river bank on the River Boyne, is Round-Fruited Rush (*Juncus compressus*) found in alluvial pasture, which is generally periodically flooded during the winter months. This rare plant is only found in three counties in Ireland.

Along much of the Boyne and along tributary stretches are areas of mature deciduous woodland on the steeper slopes above the floodplain marsh or wet woodland vegetation. Many of these are planted in origin. However the steeper areas of King Williams Glen and Townley Hall wood have been left unmanaged and now have a more natural character. East of Curley Hole the woodland has a natural appearance with few conifers. Broad-leaved species include Oak (*Quercus* spp.), Ash (*Fraxinus excelsior*), Willows, Hazel (*Corylus avellana*), Sycamore (*Acer pseudoplatanus*), Holly (*Ilex aquifolium*), Horse chestnut (*Aesculus* sp.) and the shrubs Hawthorn (*Crataegus monogyna*), Blackthorn (*Prunus spinosa*) and Elder (*Sambucus nigra*). South-west of Slane and in Dowth, the addition of some more exotic tree species such as Wych Elm (*Ulmus glabra*), Beech (*Fagus sylvatica*), and occasionally Lime (*Tilia cordata*), are seen. Coniferous trees, Larch (*Larix* sp.) and Scots Pine (*Pinus sylvestris*) also occur. The woodland ground flora includes Barren Strawberry (*Potentilla sterilis*), Enchanter's Nightshade (*Circaea lutetiana*) and Ground-ivy (*Glechoma hederacea*), along with a range of ferns. Variation occurs in the composition of the canopy, for example, in wet patches alongside the river, White Willow and Alder form the canopy.

Other habitats present along the Boyne and Blackwater include lowland dry grassland, improved grassland, reedswamp, weedy wasteground areas, scrub, hedge, drainage ditches and canal. In the vicinity of Lough Shesk, the dry slopes of the morainic hummocks support grassland vegetation which, in some places, is partially colonised by Gorse (*Ulex europaeus*) scrub. Those grasslands which remain unimproved for pasture are species-rich with Common Knapweed (*Centaurea nigra*), Creeping Thistle (*Cirsium arvense*) and Ribwort Plantain (*Plantago lanceolata*) commonly present. Fringing the canal alongside the Boyne SW of Slane, are Reed Sweet-grass (*Glyceria maxima*), Great Willowherb (*Epilobium hirsutum*) and Meadowsweet.

The Boyne and its tributaries is one of Ireland's premier game fisheries and it offers a wide range of angling from fishing for spring salmon and grilse to seatrout fishing and extensive brown trout fishing. Atlantic Salmon (*Salmo salar*) use the tributaries and headwaters as spawning grounds. Although this species is still fished commercially in Ireland, it is considered to be endangered or locally threatened elsewhere in Europe and is listed on Annex II of the Habitats Directive. Atlantic Salmon run the Boyne almost every month of the year. The Boyne is most important as it represents an eastern river which holds large three-sea-winter fish from 20–30 lb. These fish generally arrive in February with smaller spring fish (10 lb) arriving in April/May. The grilse come in July, water permitting. The river gets a further run of fish in late August and this run would appear to last well after the fishing season. The salmon fishing season lasts from 1st March to 30th September.

The Blackwater is a medium sized limestone river which is still recovering from the effects of the arterial drainage scheme of the 70's. Salmon stocks have not recovered to the numbers pre drainage. The Deel, Riverstown, Stoneyford and Tremblestown Rivers are all spring fed with a continuous high volume of water. They are difficult to fish in that some are overgrown while others have been affected by drainage with the resulting high banks.

The site is also important for the populations of two other species listed on Annex II of the E.U. Habitats Directive, namely River Lamprey (*Lampetra fluviatilis*) which is present in the lower reaches of the Boyne River while the Otter (*Lutra lutra*) can be found throughout the site. In addition, the site also supports many more of the mammal species occurring in Ireland. Those which are listed in the Irish Red Data Book include Pine Marten, Badger and Irish Hare. Common Frog, another Red Data Book species, also occurs within the site. All of these animals with the addition of the Stoat and Red Squirrel, which also occur within the site, are protected under the Wildlife Act.

Whooper Swans winter regularly at several locations along the Boyne and Blackwater Rivers. Parts of these areas are within the cSAC site. Known sites are at Newgrange (c. 20 in recent winters), near Slane (20+ in recent winters), Wilkinstown (several records of 100+) and River Blackwater from Kells to Navan (104 at Kells in winter 1996/97, 182 at Headfort in winter 1997/98, 200-300 in winter 1999/00). The available information indicates that there is a regular wintering population of Whooper Swans based along the Boyne and Blackwater River valleys. The birds use a range of feeding sites but roosting sites are not well known. The population is substantial, certainly of national, and at times international, importance. Numbers are probably in the low hundreds.

Intensive agriculture is the main landuse along the site. Much of the grassland is in very large fields and is improved. Silage harvesting is carried out. The spreading of slurry and fertiliser poses a threat to the water quality of this salmonid river and to the lakes. In the more extensive agricultural areas sheep grazing is carried out.

Fishing is a main tourist attraction on the Boyne and Blackwater and there are a number of Angler Associations, some with a number of beats. Fishing stands and styles have been erected in places. The Eastern Regional Fishery Board have erected fencing along selected stretches of the river as part of their salmonid enhancement programme. Parts of the river system have been arterially dredged. In 1969 an arterial dredging scheme commenced and disrupted angling for 18 years. The dredging altered the character of the river completely and resulted in many cases in leaving very high banks. The main channel from Drogheda upstream to Navan was left untouched, as were a few stretches on the Blackwater.

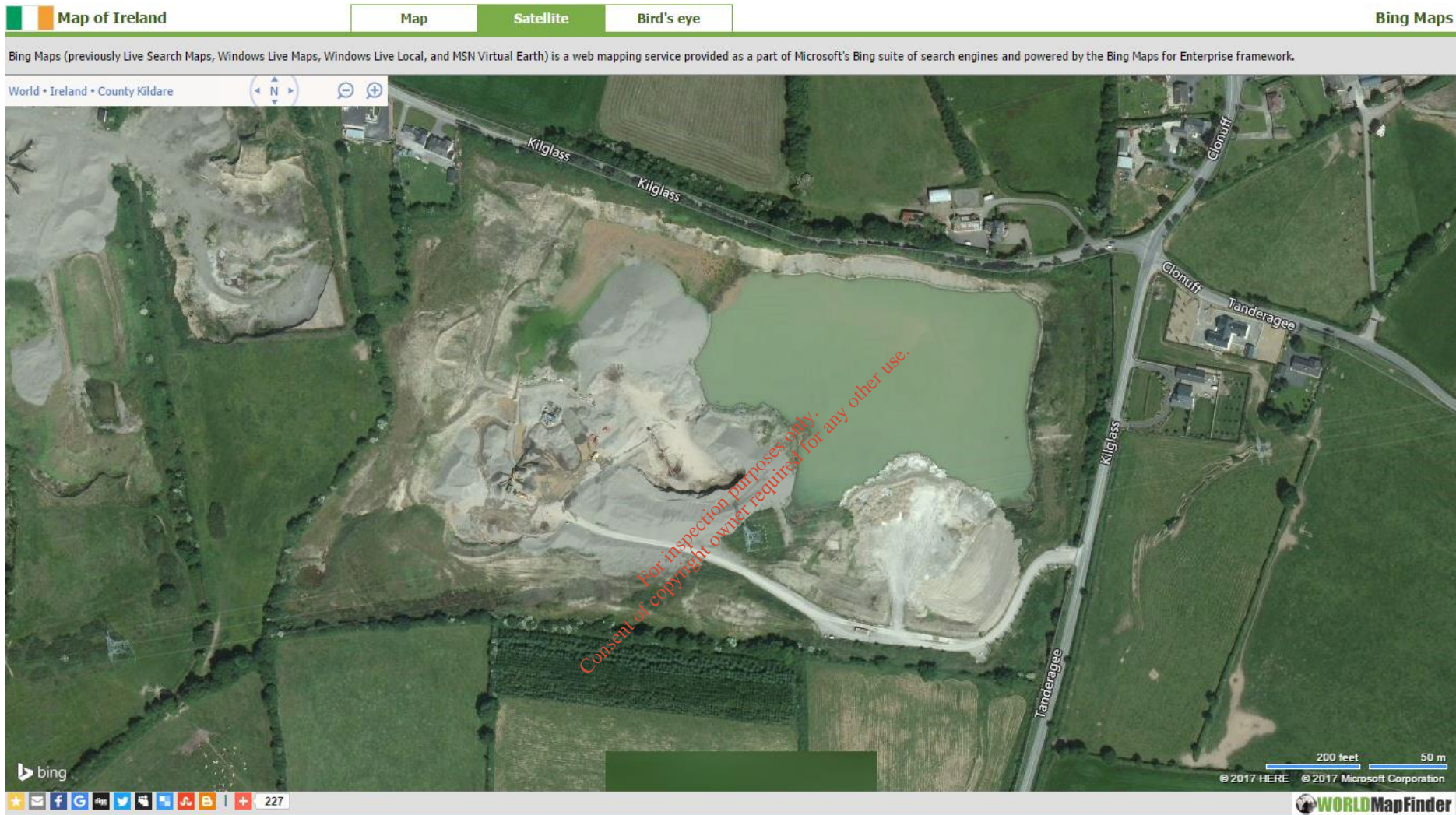


Ongoing maintenance dredging is carried out along stretches of the river system where the gradient is low. This is extremely destructive to salmonid habitat in the area. Drainage of the adjacent river systems also impacts on the many small wetland areas throughout the site. The River Boyne is a designated Salmonid Water under the EU Freshwater Fish Directive.

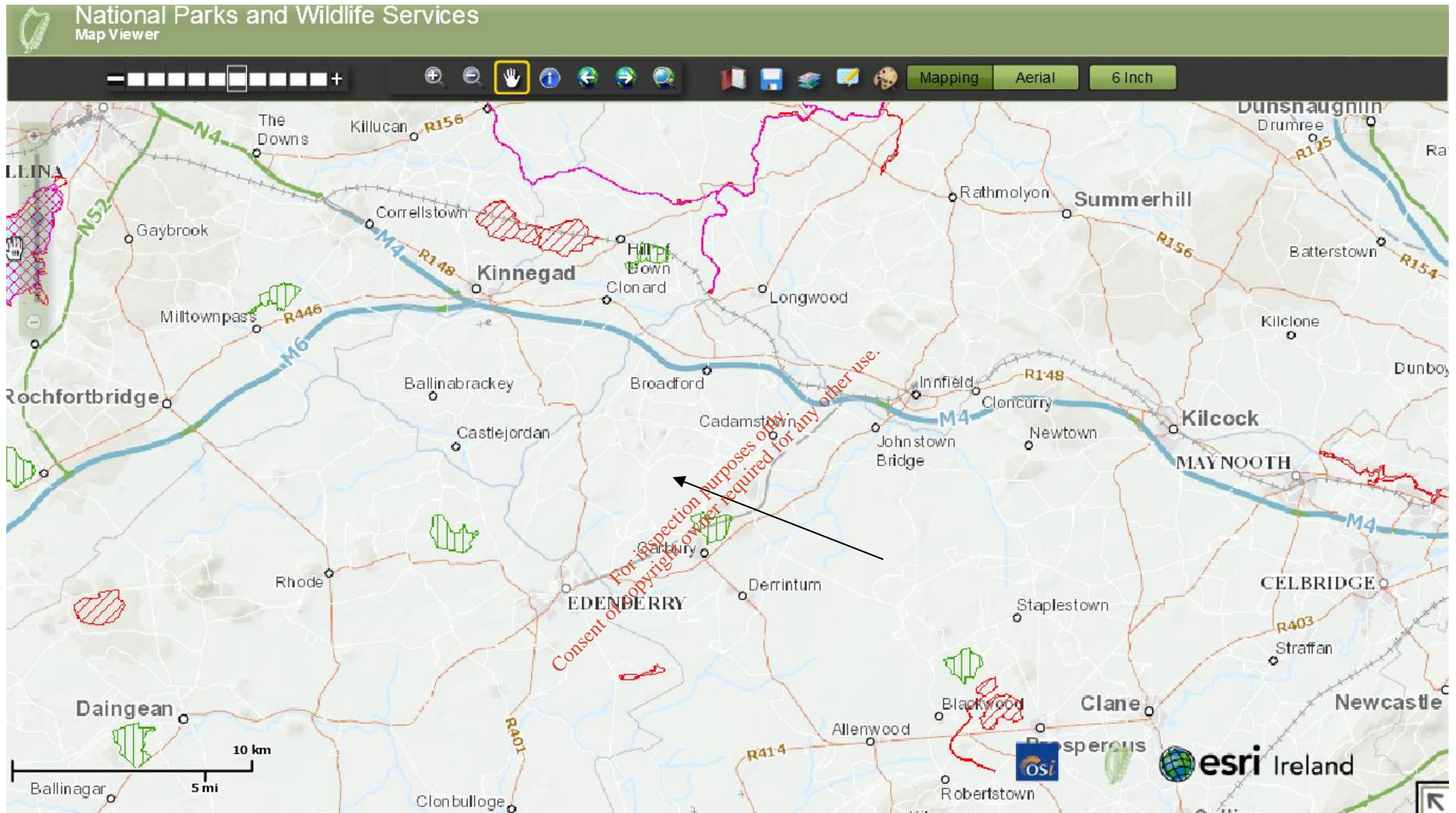
The site supports populations of several species listed on Annex II of the EU Habitats Directive, and habitats listed on Annex I of this directive, as well as examples of other important habitats. Although the wet woodland areas appear small there are few similar examples of this type of alluvial wet woodland remaining in the country, particularly in the north-east. The semi-natural habitats, particularly the strips of woodland which extend along the river banks and the marsh and wet grasslands, increase the overall habitat diversity and add to the ecological value of the site as does the presence of a range of Red Data Book plant and animal species and the presence of nationally rare plant species.

19.06.2003

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Main features and habitats of the quarry taken before extraction was complete. A second narrow pond occurs where machinery is located



Position of site in relation to Natura 2000 sites (red hatching) and NHA (green hatching)