



Figure 6.1: Site location Map.



6.4 Proposed Development Description

The proposed development seeks to extend the life of the current permitted quarry from 10 years to 25 years (as originally proposed 37L development). It proposes to develop a new dedicated quarry access road to facilitate an increase in the permitted number of HGV loads to and from the quarry from a maximum of 32 No. per day to an average of 81 No. per day (with +/-15% fluctuations in the number of loads to and from the quarry proposed to address certain demands on the quarry as and when required, equating to a maximum of 93 No. loads per day).

Access to the quarry is currently provided from the local road (Mullagh Road) that runs in a north-south direction and bounds the eastern portion of the quarry site. In order to overcome the Board's concerns regarding impacts on the local community, the subject development proposes the provision of a new private road, as well as new entry / exit points onto this new road, to serve the quarry. The existing quarry access / exit point will be relocated southwards. The development will consist of the continued provision of the office, workshop, shed and car park area. In addition, to facilitate the development, it is proposed to provide two new weighbridges aligned to the new entrance to the quarry, as well as providing a new shipping office (21 sq m). A new wheelwash to be constructed closer to the new site entrance. It is proposed to remove the existing weighbridge, demolish the existing weighbridge office (c. 29 sq m) and workshop (c. 123 sq m). A new powerhouse (46 sq m) is proposed to facilitate a mains electricity supply for use by pumps, plant and machinery in the future. The bunded and covered fuel tanks, septic tank and percolation area permitted under the 37L development have not yet been implemented. The septic tank will be installed and commissioned to treat the wastewater from the toilet contained on the proposed new shipping office.

The proposed new private access road will reduce the impacts on the local community by redirecting the HGVs away from Bellewstown Village. The new road will cross the Mullagh Road and fields in a northeast direction away from the quarry. The road is approximately 1,737m long starting at the Mullagh Road and has a minimum width of c. 6m increasing to up to 9.25m wide on some internal bends. The new link road will also be used by the farmer whose lands it crosses to provide internal access to their farm for agricultural purposes. Refer to Chapter 12 of this EIAR for further detail. This road will allow an average number of 81 No. daily loads from the quarry to facilitate an extraction level of approximately 450,000 tonnes per annum. The total extraction period proposed is 25 years, with an additional year required to facilitate restoration works.

Following construction of the new access road, trucks exiting the quarry site, rather than travelling south down the Mullagh Road onto the local road in the south (referred to as Bellewstown Road), which links with the R152 in the west and the R132 in the east, will travel along a new proposed private road, the entrance to which will be on the east side of the Mullagh Road traversing existing agricultural land for c. 1.7km northeast away from the quarry, and exiting on the west side of the L1615 north of existing farm buildings. The L1615 then meets the R150 in the north.

The existing quarry access / egress point will be moved southwards c.25m and new access / egress points will be created into the agricultural fields, one at each end of the new road. Security gates and lifting barriers will be provided at each of these access / egress points ensuring that the road cannot be accessed by members of the public. Boundary fencing will also be provided at these points and either side of the road for its entire length across the



agricultural land. In addition, an existing stone wall to the south of the east access / exit point at farm buildings will be extended to meet the new entrance / exit point.

The imposition of Condition No. 3 of the Board's Order in relation to the 37L development came as a result of the recommendations made in the Quarries and Ancillary Activities Guidelines for Planning Authorities, April 2004 prepared by the Department of the Environmental, Heritage and Local Government regarding the lifespan of planning permissions. Specifically, Section 4.9 of the Guidelines states that:

"Where the expected life of the proposed quarry exceeds 5 years it will normally be appropriate to grant permission for a longer period (such as 10 - 20 years), particularly where major capital investment is required at the outset. In deciding the length of the planning permission, planning authorities should have regard to the expected life of the reserves within the site. The purpose of setting a finite period is not to anticipate that extraction should not continue after the expiry of that period, but rather to enable the planning authority, in conjunction with the developer and environmental authorities, to review changes in environmental standards and technology over a decade or more since the original permission was granted."

To address any concerns regarding the environmental impacts arising from the quarry, this EIAR provides updated Mitigation and Monitoring measures (see Chapter 16). It is proposed, in the event of a grant of permission for the development proposed, that Kilsaran will develop and implement an Operational Mitigation Management Plan, reviewing this every 5 years up to the end of the quarry's 25 year life and submitting same with the Local Authority for agreement on a 5-yearly basis.

6.4.1 Proposed Development and Public Roadworks

Chapter 3 of the EIAR outlines the various stages of the proposed project, describing the development of a new access track and the ongoing quarrying operations at the site, prior to restoration according to the quarry restoration plan. Further detail is provided in relation to the blasting of rock faces, crushing and stockpiling of rock.

Other development works are required to facilitate the proposed development, as well as improving road infrastructure generally for the area. The Applicant has agreed these in principle with Meath County Council. These works include proposals to improve the carriageway of the L1615 including the application of a new surface overlay on the L1615 from its junction with the R150 to the entry / exit point of the proposed link road.

A structural survey undertaken on Beaumont Bridge has revealed that strengthening and repair works are required to ensure the safe movement of all vehicles over the River Nanny on the L1615 as well as improving the carriageway over the bridge. Chapter 12 Traffic of this EIAR describes these works in detail. These public road works will not just facilitate the development, they will be of significant benefit to all road users by ensuring the safe use of the bridge whilst improving general road safety of the L1615. It is proposed that these works outlined above (and referred to throughout this EIAR and accompanying NIS as "public roadworks") will be carried out by Kilsaran under licence from Meath County Council's and on the Local Authority's behalf in accordance with the *Roads Act, 1993* (as amended) in the event



of a grant of permission for the proposed development. The works are assessed in the context of potential cumulative impacts in conjunction with the subject proposal in the relevant Sections of this EIAR.

6.4.2 Quarry Operations

It is proposed that the proposed extension area will be operated in the same way as the existing permitted quarry operation. Rock breaking is currently not permitted prior to 08:00, in this regard, extraction and processing of rock at the quarry will take place between 08:00 and 18:00 hours on Monday to Friday and between 08:00 and 14:00 hours on Saturdays. The 07:00 hrs start each working day facilitates the loading and haulage operation. The 07:00 start also spreads the haulage operation over the day and enables the early supply of materials to the construction industry, in line with industry demands.

No operation will take place on Sundays or Bank Holidays other than pumping, which will take place intermittently, and with some occasional maintenance works.

6.4.3 Quarry Restoration

6.4.3.1 Filling and Progressive Restoration

Restoration Works

The cessation of commercial rock extraction at year 25 provides an opportunity to create new habitat and contribute to the promotion of biodiversity.

The restoration plan for the quarry area was permitted under the 37L development. There are no changes proposed to the restoration plan as presented to MCC through compliance with condition No. 15 under the 37L application. Further progressive restoration is proposed in the form of a pathway around the quarry which will be used for geological interest. Notice boards will be erected describing the features present on site.

The landscaping plan which has been prepared for this project is detailed in Chapter 11 of the EIAR and enclosed under separate cover with this application. This will include the construction of a hedgerow on one side of the new access road with trees planted at intervals on the adjacent side along the access track. The access track will run c. 1.7kms to the existing quarry linking it to the L1615. Gaps will be left along the access road for the farmer, whose land the works cross, to provide internal access to the farm for agricultural purposes. These landscaping proposals provide for the natural regeneration of vegetation in certain areas.

Hedgerow planting shall consist of a mixture of native hedgerow species that are prevalent in the immediate area. Planting to consist of feathered whips (of various sizes) and advanced nursery stock (where necessary) in staggered rows at a spacing of 600mm. New sections of hedgerow will be planted with a triple staggered row of whips and advanced nursery stock at 600mm spacing. All native species will be planted as whips, with the primary and secondary structure species to be of a minimum height of 80-100cm and the other shrub species to be



of a minimum height of 40-60cm. Hedgerows will be maintained at a height of 3-4m unless otherwise specified.

There will be a substantial amount of low canopy dominant woodland planting as part of the landscaping plan. The woodland planting mix to comprise of High Canopy Dominants (<20%), Low-canopy: Sub-dominants (20-25%), Understorey and Fringe: High-Shrubs (20-40%) and Understorey and Edge: Lower-Shrubs (15-25%). Planting to be allowed to grow to reach maturity. Trees to be planted at varying distances from 1.5m x 1.5m to 3.0m x 3.0m. Smaller shrubs to be planted at spacing between 900mm and 1500mm centres depending on species. Species mix to be finalised in conjunction with the project ecologist. This planting will augment existing well-established planting located on existing perimeter screening mounds to the south and east. All species to be from certified native stock and preferably from an approved supplier of the Green, Low-Carbon, Agri Environment Scheme (GLAS).

At an early stage of the excavation proposed new extraction area, mounds will be constructed from the stripped overburden along the extended southern, western and northern limits of excavation and will be planted in accordance with the Landscaping Plan given in Chapter 11 – Landscape of this EIAR. All hard-standing areas and plant will be removed at the end of the quarrying activities. The area of land accommodating the proposed road and entrances will remain to serve the agricultural land. As detailed in Chapter 11, the majority of the internal worked quarry faces will not be visible from outside views. It is anticipated that the basin of the quarry will flood to produce a deep lake and become an attractive habitat for birds. Many such flooded former quarry sites are of biodiversity interest and it would be expected that the site will be an area of some importance for waterbirds in the post-closure period.

6.5 Methodology

This ecological assessment has been prepared for the proposed quarry extension following a thorough desktop review of previous ecological information and field surveys carried out at the quarry site and other ecological information from the general area. The survey schedule is summarised in Table 6.1.

The methodology employed in the carrying out of this ecological assessment is outlined below.

6.5.1 Desktop Review

A desktop review of relevant data available for the study area was undertaken reviewing previous ecological surveys from the quarry site as well as other relevant information (e.g. online ecology and environmental databases).

The National Parks and Wildlife Service (NPWS), National Biodiversity Data Centre (NBDC) and Botanical Society of Britain and Ireland (BSBI) online databases were consulted to identify any rare, protected and non-native invasive species located within the relevant national 10km and 2km grid squares surrounding the proposed development site.

The model of Bat Landscapes, available on the NBDC website was consulted. This model is based on the relative importance of landscape and habitat associations for bat species in



Ireland and the index ranges from 0 to 100, where 100 is the most suitable for bats (Lundy *et al.* 2011).

6.5.2 Designated Conservation Sites

Designated nature conservation sites within the wider hinterland of the proposed development site were identified through a desktop review and by GIS analysis. Nature Reserves and Refuges for Fauna are protected under the *Irish Wildlife Acts* (1976-2010). Designated conservation sites include national sites, Natural Heritage Areas (NHAs) and Proposed Natural Heritage Areas (pNHAs). While NHAs are legally protected by the *Irish Wildlife Acts* (1976 - 2010), pNHAs are not.

European sites, Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) have been designated under the EU Habitats Directive (92/43/EEC) and the EU Birds Directive (2009/147/EC) respectively. SACs and SPAs are collectively known as Natura 2000 sites and are legally protected by Irish law. Many designated sites overlap, e.g. a site can be designated as both a SAC and NHA.

There are no Natura 2000 sites located within 6km of the Application Boundary. A screening appraisal report was also prepared in support of the AA process. The main purpose of this report was to identify whether likely significant effects on any Natura 2000 site are likely to arise from the proposed development. The conservation objectives of Natura 2000 sites (i.e. habitats and species for which the sites are selected) are referred to when carrying out appropriate assessments for plans and projects that might impact on these sites.

The outcome of the screening stage assessment is outlined in Section 6.4 with the Screening Assessment report and Natura Impact Statement in support of the AA process submitted to accompany the planning application. Details of distances to designated sites, conservation objectives etc. are also provided in the Natura Impact Statement which accompanies this planning application (see Appendix 6.1).



Date	Time	Weather	Ecologist	Task
17.08.2020	14.30-16:45	Mostly dry, Overcast, Cloud 8/8, Wind F3, Mild, Good Visibility	Dr. Gavin Fennessy	Baseline ecological survey – bird and mammal survey
21.09.2020	10.30 - 15.45	Mild, F3-4, Sunny spells and Dry, Cloud 4/8, Good visibility	Dr. John Conaghan	Habitat and botanical survey
25.09.2019	09:30 - 14:30	F4, Sunny spells, Cloud 5/8, Dry, Good visibility	Tom O'Donnell & Éinne O'Cathasaigh	Mammal survey, bird survey, assessment of other taxa, Deployment of remote cameras and bat detector
05.10.2020	13:00 – 16:30	Warm, Cloud 7/8, Cloudy and Dry, F4-5, Good visibility	Tom O'Donnell	Baseline walkover and collection of mammal cameras and bat detector

Table 6.1: Baseline field assessment details - 2020.

6.5.3 Habitat & Botanical Assessment

The habitat and botanical assessment was carried out Dr. John Conaghan on 21st September 2020 in accordance with best practice guidance (Smith *et al.* 2011). The main purpose of the habitat/vegetation survey was to describe the habitats/vegetation present and to assess their ecological value. The survey area at Bellewstown (Irish Grid reference O 078 671) comprises an active quarry area and adjoining areas of land located 2.8 kilometres south-east of Duleek village in east Co. Meath.

The quarry lies at an elevation of approximately 130 metres and the associated bedrock geology of the quarry area is volcanic rhyolite, ignimbrite and rhyolitic tuffs. The soils of the surrounding farmland comprises a fertile loamy drift which overlies sandstone/limestone bedrock. The majority of the surrounding land is dominated by a mixture of improved agricultural grassland (GA1) with some fields also used for cereal production.

Habitats occurring within the survey area were classified according to the scheme outlined in *A Guide to Habitats in Ireland* (Fossitt 2000). During the site survey particular attention was paid to the possible occurrence of plant species listed in either the 2015 *Flora Protection Order* or the *Irish Red Data Book* (Curtis and McGough 1988). Vascular plant species nomenclature in this report follows (Stace 2010) while that of mosses follows Smith (2004). In addition to surveying and describing the distribution of habitats and vegetation within the site, a number of photographs were taken and a selection of these have been included in this report.



The correspondence of the habitats within the study area to those listed on Annex I of the EU Habitats Directive 92/43/EC was evaluated with reference to the *Interpretation of European Union Habitats* (European Commission, 2013) and the *Status of EU Protected Habitats and Species in Ireland* (NPWS, 2013).

6.5.4 Mammal Assessment

6.5.4.1 Non Volant Mammals

Mammal surveys of the site were undertaken by Tom O'Donnell and Éinne Ó Cathasaigh on the 25th September 2020 and 5th October 2020. Surveys included a walkover of the proposed quarry extension site, identifying mammal species or signs of mammal activity seen (e.g. droppings, tracks, burrows etc.) and recording observations using field notes and/or handheld GPS units. All parts of the site were walked with particular focus on the field boundaries and proposed extension to the extractive area. Techniques used to identify mammal activity followed recognised guidelines (e.g. Clark 1988, Sutherland 1996, Bang & Dahlstrom 2004 and JNCC 2004).

In addition, two digital trail cameras (Camera-traps) which take photographs and/or video when triggered by heat or motion, were also deployed to record mammal activity within the study area. In total, two trail cameras were erected at, and in the vicinity of the site between 25th September and 5th October 2020 inclusive. The locations of equipment deployed is shown in Figure 6.2.

The conservation status of mammal species was considered. The conservation status of mammals within Ireland and Europe is indicated by inclusion in one or more of the following: Irish Wildlife Acts (1976 - 2010); Red List of Terrestrial Mammals (Marnell et al. 2009); EU Habitats Directive.

6.5.4.2 Bat Assessment

An ultrasonic detector survey was carried out at the site between the 25th September and 5th October 2020. The purpose of this survey was to record bat activity in the area from which information on species composition, relative abundance and landscape usage could be derived. Two Wildlife Acoustics SM4 full-spectrum bat detectors were deployed (Figure 6.2). Species identification was aided by post hoc sonogram analysis using Wildlife Acoustics' Kaleidoscope Professional software (v. 5.1.9g).

The conservation of Bat species was considered. All Irish bat species and their breeding, roosting and resting locations are legally protected under both the **Irish Wildlife Acts** (1976-2010) and as Annex IV species in the EU Habitats Directive (92/43/EEC).

6.5.5 Bird Assessment

All bird species seen or heard at the site during the site walkover surveys between August 2020 and October 2020 were noted. Any behaviours indicative of breeding or roosting on or in the vicinity of the site were recorded.



The avian community in the wider locality was assessed based on a detailed desktop review of available data for the study area, including the NBDC online database and Bird Atlas 2007–2011. The conservation status of bird species was assessed with reference to; EU Birds Directive (2009/147/EC) Annex I list and Birds of Conservation Concern in Ireland; (BoCCI) Red, Amber and Green list (Colhoun & Cummins, 2013). On the BoCCI list; Red-listed species are of high conservation concern in Ireland, Amber-list are considered of medium conservation concern, while Green-listed species are not of conservation concern in Ireland at present. Bird species listed on Annex I of the EU Birds Directive are considered of high conservation concern across Europe.

6.5.6 Other Taxa Assessment

Other taxa encountered during the general baseline walkovers were recorded. The conservation status of other taxa was assessed by examining their inclusion in one or more of the following: Irish Wildlife Acts (1976–2010); Irish Red List for Butterfly (Regan *et al.* 2010); Irish Red List for Damselflies & Dragonflies (Nelson *et al.* 2011); Irish Red List for Amphibians, Reptiles & Freshwater Fish (King *et al.* 2011); Regional Red List of Irish Bees (Fitzpatrick *et al.* 2006); and the EU Habitats Directive.



Figure 6.2: Passive bat detector and trail camera survey locations.



6.6 Results

The following sections detail the results of the desktop and field surveys which are used to inform the ecological impact assessment.

6.6.1 Designated Conservation Sites

The proposed development site is not located within any designated Natura 2000 site or nationally designated conservation site. There are five Natura 2000 sites located within 15km of the applications boundary (Table 6.2; Figure 6.3). There are 16 pNHA sites and no NHA sites located within 15km of the application site (Table 6.2; Figure 6.4).

The most proximate Natura 2000 sites are situated over 6km away from the quarry: River Nanny Estuary & Shore SPA (004158; 6.2km) and River Boyne and River Blackwater SAC (002299; 6.2km). Three additional coastal Natura 2000 sites are located within 15km of River Boyne & River Blackwater SPA (004232; 6.8km), Boyne Estuary SPA (004080; 7.0km) and Boyne Coast & Estuary SAC (001957; 7.7km). There are three pNHA sites located within 5.0km of the application boundary, the closest of these being Cromwell's Bush Fen pNHA (001576; 2.7km).

The likely significant effects on European designated sites arising from the proposed development are addressed in the accompanying NIS in support of the AA process.

A summary of the qualifying/special conservation interests of the Natura 2000 sites in the wider hinterland is shown in Table 6.3. Short site synopses for the most proximate of the pNHA sites are shown in Table 6.4.



Site Name	Site ID	Distance (km)
<i>Internationally Designated Sites</i>		
River Nanny Estuary & Shore SPA	004158	6.2
River Boyne & R. Blackwater SAC	002299	6.2
River Boyne & R. Blackwater SPA	004232	6.8
Boyne Estuary SPA	004080	7.0
Boyne Coast & Est. SAC	001957	7.7
<i>Nationally Designated Sites</i>		
Cromwell's Bush Fen pNHA	001576	2.7
Duleek Commons pNHA	001578	3.0
Laytown Dunes/Nanny Est. pNHA	000554	5.0
Thomastown Bog pNHA	001593	5.8
Dowth Wetland pNHA	001861	7.0
Boyne River Is. pNHA	001862	7.2
Balrath Woods pNHA	001579	7.5
Boyne Coast & Est. pNHA	001957	7.7
Rossnaree Riverbank pNHA	001589	8.4
King William's Glen pNHA	001804	8.7
Crewbane Marsh pNHA	000553	9.2
Bog of the Ring pNHA	001204	10.4
Boyne Woods pNHA	001592	11.9
Knock Lake pNHA	001203	12.4
Slane Riverbank pNHA	001591	12.5
Blackhall Woods pNHA	001293	14.4

Table 6.2: Designated conservation sites within 15km of the application boundary.



Site Name	Site Code	Qualifying/Special Conservation Interests	Minimum Distance to Site (km)
River Nanny Estuary & Shore SPA	004158	Oystercatcher (<i>Haematopus ostralegus</i>) [A130] Ringed Plover (<i>Charadrius hiaticula</i>) [A137] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Knot (<i>Calidris canutus</i>) [A143] Sanderling (<i>Calidris alba</i>) [A144] Herring Gull (<i>Larus argentatus</i>) [A184] Wetland and Waterbirds [A999]	6.2
River Boyne & R. Blackwater SAC	002299	Habitats Alkaline fens [7230] Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae) [91E0] Species <i>Lampetra fluviatilis</i> (River Lamprey) [1099] <i>Salmo salar</i> (Salmon) [1106] <i>Lutra lutra</i> (Otter) [1355]	6.2
River Boyne & R. Blackwater SPA	004232	Kingfisher (<i>Alcedo atthis</i>) [A229]	6.8
Boyne Estuary SPA	004080	Shelduck (<i>Tadorna tadorna</i>) [A048] Oystercatcher (<i>Haematopus ostralegus</i>) [A130] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Grey Plover (<i>Pluvialis squatarola</i>) [A141] Lapwing (<i>Vanellus vanellus</i>) [A142] Knot (<i>Calidris canutus</i>) [A143] Sanderling (<i>Calidris alba</i>) [A144] Black-tailed Godwit (<i>Limosa limosa</i>) [A156] Redshank (<i>Tringa totanus</i>) [A162] Turnstone (<i>Arenaria interpres</i>) [A169] Little Tern (<i>Sterna albifrons</i>) [A195] Wetland and Waterbirds [A999]	7.0
Boyne Coast & Est. SAC	001957	Habitats Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Annual vegetation of drift lines [1210] <i>Salicornia</i> and other annuals colonising mud and sand [1310] Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) [1330] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	7.7

Table 6.3: Summary of designated Natura 2000 Sites of relevance to the current proposed development.



Site Name	Site Code	Site Description/Conservation Interests	Minimum Distance to Site (km)
Cromwell's Bush Fen pNHA	001576	Cromwell's Bush Fen pNHA is a small wetland lying some 6km southwest of Duleek in a pastoral/arable setting over poorly draining glacial drift. A wide range of fen communities are represented on site, from open water to relatively dry coarse grassland.	2.7
Duleek Commons pNHA	001578	About 1km northwest of Duleek, Duleek Commons pNHA occupies a level, drained marsh area that was associated with the floodplain of a tributary running from Thomastown Marsh, through the undulating drift landscape to the River Nanny. It has been damaged by localised drainage.	3.0
Laytown Dunes/Nanny Est. pNHA	000554	Laytown Dunes/Nanny Estuary pNHA is a complex of muddy estuarine channel with patches of saltmarsh, opening out onto a wide exposed sandy beach. The site is of interest because of its saltmarsh and freshwater habitats and refuges these habitats provide for birds and other species.	5.0
Thomastown Bog pNHA	001593	This site is situated 3 km west of Duleek, Co. Meath. The site consists of a raised bog surrounded by wet woodland and wet grassland. The site is in a hollow surrounded by farmland on higher ground and is bordered by an embanked railway track on the northern side. The site is dissected by broad deep drainage channels throughout.	5.8
Dowth Wetland pNHA	001861	This is a floodplain marsh site located 4 km east of Slane along the northern bank of the River Boyne. The site comprises an area of floodplain marsh with an associated area of deciduous woodland on steep slopes. The marsh occurs on wet alluvial soils, regularly flooded by the river.	7.0

Table 6.4: Summary of nationally designated conservation sites closest to the application site boundary.

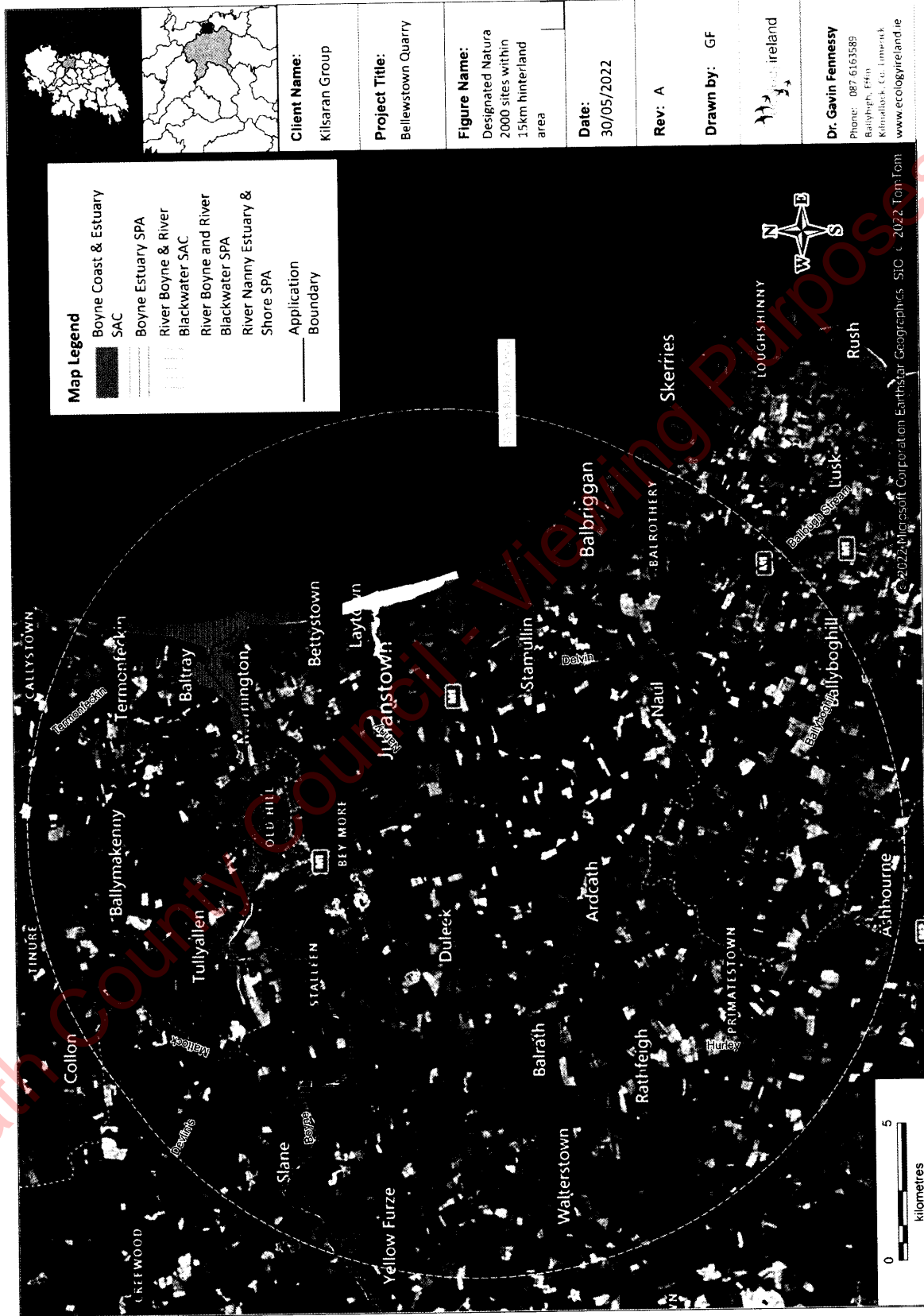


Figure 6.3: Natura 2000 sites located in the 15km hinterland of the application site at Bellewstown Quarry.

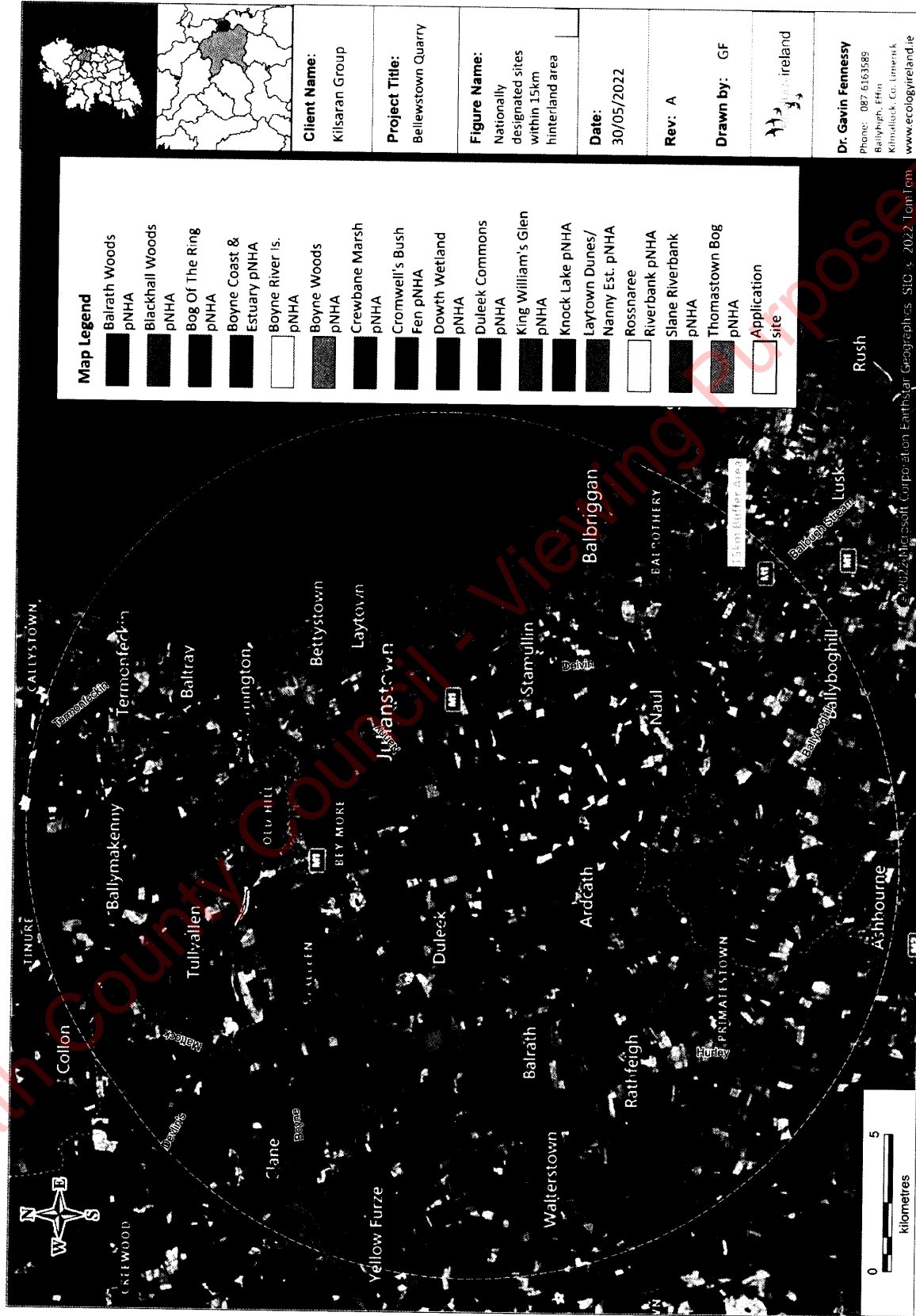


Figure 6.4:
Nationally
designated
conservation
sites within
15km
hinterland of
the application
site boundary
at Bellewstown
Quarry.



6.6.2 Hydrological Connectivity

The application site lies within the Nanny/Delvin Catchment (Hydrometric Area 08). Most of the quarry area is located within the Nanny-SC-020 sub-catchment with the southern part of the extractive area and the water treatment facility within the Nanny-SC-010 sub-catchment. The discharged water from the water treatment wetland flows via a culvert under the Carnes Road into a land drain that in turn flows into Lunderstown Stream, which in turn flows into the Nanny River southeast of Duleek (Meath County Council Reg. Ref. No. 10/02). Near the proposed new entrance to the site on the L1615 flows a small watercourse called the Gafney Stream a tributary of the Nanny River.

The River Nanny flows onwards to the River Nanny Estuary & Shore SPA. Overland the distance from the quarry site is 6.2km (overland) from this SPA. Following the hydrological route from the discharge into the Lunderstown Stream the SPA site is c. 20km downstream of the quarry. There is no direct hydrological link between the site and the other designated sites situated with 15km of the proposed development.

The local hydrology and hydrogeology are described in detail in Chapter 8 of the EIAR. The groundwater in the area of the proposed development (IE-EA-G-012) is not at risk and received a 'Good' Water Framework Directive Status (EPA, 2013-2018). In contrast, the Nanny has relatively poor biological water quality (Q3) east of Duleek and was assigned 'Moderate' Water Framework Directive status (EPA, 2013-2018).

6.6.3 Botanical & Habitat Survey

The habitats and vegetation which occur within the survey area are generally considered to be of relatively low botanical value. The habitats which occur have a low botanical diversity and are considered to be common and widespread throughout Ireland (Fossitt 2000). Of the habitats recorded the most botanically interesting are the areas of broadleaved woodland, however most of these woodland areas have been established recently, being mostly planted for screening purposes within the past 40 years. None of the habitats which were recorded correspond to ecologically important habitats listed in Annex I of the EU Habitats Directive (European Commission, 2013).

None of the plant species recorded within the survey area are listed on the 2015 *Flora Protection Order* and none are considered to be rare in a local context. The habitats which occur would not be considered to provide likely habitat for any rare plant species (Curtis and McGough, 1988). In many areas of Ireland quarry areas are known to support areas of the priority Annex I grassland habitat type [6210] Orchid-rich calcareous grassland, however the geology of the quarry area at Bellewstown is not sufficiently calcareous to support a species-rich, calcareous grassland flora.

The main habitats occurring within the survey area are outlined in the following sections. A plant species list for the habitats present is outlined in Table 6.5 and a map which shows the distribution of habitats within the survey area is presented in Figure 6.5.



6.6.3.1 Improved Agricultural Grassland (GA1)

Fields dominated by agriculturally improved grassland (GA1) occur to the north and south of the quarry area (Plate 6.1). The grassland vegetation is generally dominated by perennial ryegrass (*Lolium perenne*), cocks foot (*Dactylis glomerata*), creeping buttercup (*Ranunculus repens*) and Yorkshire fog (*Holcus lanatus*). Other frequent plant species include common meadow-grass (*Poa pratensis*), common bent (*Agrostis capillaris*), white clover (*Trifolium repens*), creeping thistle (*Cirsium arvense*), common mouse-ear (*Cerastium fontanum*), ribwort plantain (*Plantago lanceolata*) and ragwort (*Senecio jacobea*). These grassland species are very common, have a widespread distribution in Ireland and are generally associated with agricultural improvement. The vegetation is grazed by livestock and also probably receives regular fertilizer application. No Equivalent EU Annex 1 Habitat.



Plate 6.1: A view of improved agricultural grassland to the south of the quarry area with band of broadleaved trees, planted for screening purposes, visible in the distance.

6.6.3.2 Dry Meadows and Grassy Verges (GS2)

The disused quarry area to the east of the road (Outside of the application site area) is dominated by a mixture of dry meadow vegetation (GS2) and recolonizing mounds of gravel (ED3). The ungrazed grassy vegetation in the dry meadow areas is generally dominated by false oat-grass (*Arrhenatherum elatius*) and red fescue (*Festuca rubra*) (Plate 6.2) with frequent *Trifolium repens*, *Holcus lanatus*, *Agrostis capillaris*, creeping bent grass (*Agrostis stolonifera*) and curled dock (*Rumex crispus*). This grassland vegetation has developed recently in areas of disturbed soil associated with quarrying operations. No Equivalent EU Annex 1 Habitat.



Plate 6.2: General view of meadow grassland which has recolonized an old quarry area to the east of the main active quarry area.

6.6.3.3 Recolonizing Bare Ground (ED3)

To the east of the road there is an area of gravel mounds which are being recolonized by a species-poor grassland vegetation (Plate 6.3). The main recolonizing species are *Arrhenatherum elatius*, *Hypochoeris radicata*, *Holcus lanatus* and *Agrostis capillaris*. Weedy plant species such as colts foot (*Tussilago farfara*) and procumbent pearlwort (*Sagina procumbens*) are also occasional. The cover of bare soil/gravel on these mounds generally varies between 20 and 50%. No Equivalent EU Annex 1 Habitat.



Plate 6.3: Gravel mounds being recolonized by grassland vegetation.



6.6.3.4 Scrub (WS1)

A narrow band of species-poor scrub vegetation dominated by gorse (*Ulex europaeus*) occurs along the northern and western margins of the active quarry area. The height of the scrub is generally between 1 and 2 metres tall. Briar (*Rubus fruticosus* agg.) is also frequent with some *Arrhenatherum elatius*, *Cirsium arvense*, *Chamerion angustifolium*, *Hedera helix* and *Crataegus monogyna*. No Equivalent EU Annex 1 Habitat.

6.6.3.5 Broadleaved Woodland (WD1)

Areas of tall broadleaved woodland occur along the southern and eastern margins of the quarry area (Plate 6.4). These areas are a mixture of areas planted relatively recently for screening purposes with small areas of longer established woodland dominated by beech (*Fagus sylvatica*) along a road in the south of the survey area. The woodland areas are typically dominated by ash (*Fraxinus excelsior*), sycamore (*Acer pseudoplatanus*) and birch (*Betula pubescens*) with smaller amounts of *Fagus sylvatica*, hawthorn (*Crataegus monogyna*) and planted oak (*Quercus* sp.). The woodland ground layer is generally dominated by ivy (*Hedera helix*) and *Rubus fruticosus* agg. with frequent soft shield fern (*Polystichum setiferum*), herb Robert (*Geranium robertianum*), wood avens (*Geum urbanum*), male fern (*Dryopteris filix-mas*) and hart's tongue fern (*Phyllitis scolopendrium*).

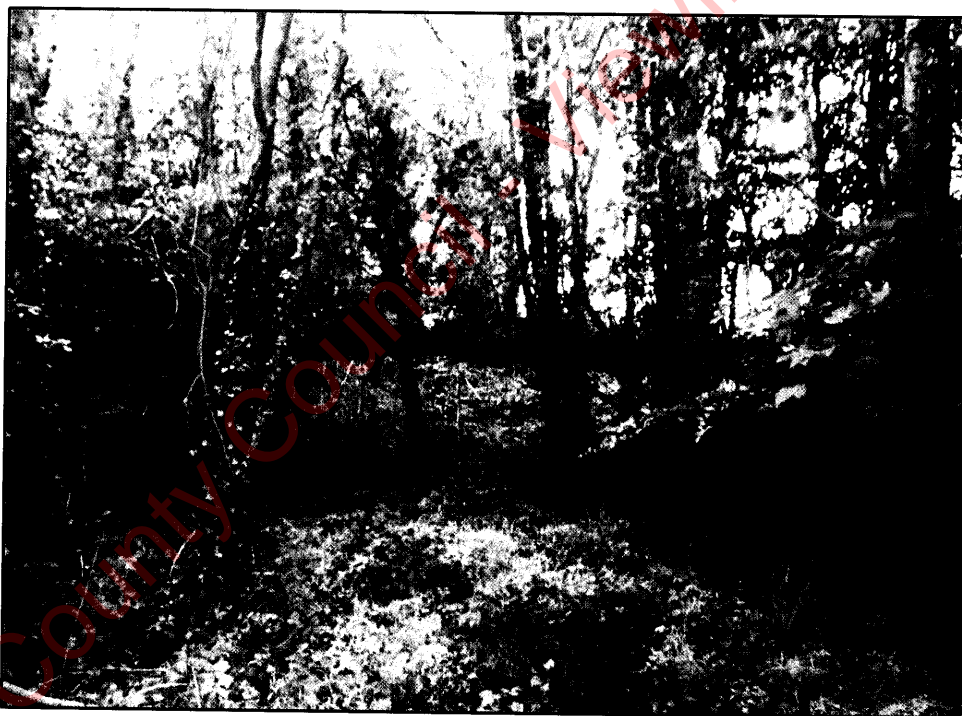


Plate 6.4: A view of broadleaved woodland which occurs along the road to the east of the active quarry area.

6.6.3.6 Active Quarries and Mines (ED4)

The majority of the survey area is dominated by an active quarry area. Most of the area comprises exposed bedrock and excavated stone with a number of processes stone mounds present. There is generally very little vegetation occurring apart from small areas of

undisturbed rock substrate which are partly vegetated by weedy plant species such as colts foot (*Tussilago farfara*), *Ulex europaeus*, ribwort plantain (*Plantago lanceolata*), *Holcus lanatus* and *Senecio jacobea*.

There are a number of sheds/temporary buildings located along the eastern entrance to the quarry and these have been included in the areas mapped as active quarry. No Equivalent EU Annex 1 Habitat.

6.6.3.7 Spoil and Bare Ground (ED2)

A small area of recently deposited soil was noted to the north of the active quarry area. This area has small patches of recently colonizing grassland species such as *Agrostis stolonifera*, *Holcus lanatus*, *Ranunculus repens* and spear thistle (*Cirsium vulgare*) present. No Equivalent EU Annex 1 Habitat.

6.6.3.8 Arable Crops (BC1)

The large field to the north-east of the quarry, through which a quarry access road is proposed, is dominated by planted cereals. At the time of survey these fields were just recently planted and the cereal crop was only a couple of centimetres tall (Plate 6.5). Fields planted with potatoes were noted in the north-western corner of the survey area. Associated plant species are generally sparse however ruderal species such as redshank (*Periscaria maculosa*) and knotweed (*Polygonum aviculare*) were recorded. No Equivalent EU Annex 1 Habitat.



Plate 6.5: View of recently planted arable land to along the proposed route of the new quarry access road.



6.6.3.9 Invasive Species

Species listed on the Third Schedule of the 2011 European Communities (Birds and Natural Habitats) Regulations (i.e. species of which it is an offense to disperse, spread or otherwise cause to grow in any place) were not found within the proposed development site. Alien Invasive Species (AIS) of union concern listed in Regulation (EU) 1143/2014 were not recorded within the proposed development site.

Plant Species	Broadleaved woodland (WD1)	Scrub (WS1)	Improved Grassland (GA1)	Meadow grassland (GS2)/disturbed ground
<i>Acer pseudoplatanus</i> (Sycamore)	✓			
<i>Alnus incana</i> (Grey alder)	✓			
<i>Alnus glutinosa</i> (Alder)	✓			
<i>Acer campestre</i> (Field maple)	✓			
<i>Betula pubescens</i> (Downy birch)	✓			
<i>Corylus avellana</i> (Hazel)	✓			
<i>Dryopteris filix-mas</i> (Male fern)	✓			
<i>Fraxinus excelsior</i> (Ash)	✓			
<i>Fagus sylvatica</i> (Beech)	✓			
<i>Galium aparine</i> (Cleavers)	✓			
<i>Geranium robertianum</i> (Herb Robert)	✓			
<i>Geum urbanum</i> (Wood avens)	✓			
<i>Hedera helix</i> (Ivy)	✓			
<i>Heracleum sphondylium</i> (Hogweed)	✓			
<i>Kindbergia praelonga</i> (A moss)	✓			
<i>Phyllitis scolopendrium</i> (Harts tongue fern)	✓			
<i>Persicaria wallichii</i> (Himalyan knotweed)	✓			
<i>Polystichum setiferum</i> (Soft shield fern)	✓			
<i>Rubus idaeus</i> (Wild raspberry)	✓			
<i>Salix cinerea oleifolia</i> (Grey willow)	✓			
<i>Salix caprea</i> (Goat willow)	✓			
<i>Sambucus nigra</i> (Elder)	✓			
<i>Symphoricarpos rivularis</i> (Snowberry)	✓			
<i>Quercus</i> sp. (Oak species)	✓			
<i>Veronica chamaedrys</i> (Germander speedwell)	✓			
<i>Vicia sepium</i> (Bush vetch)	✓			
<i>Chamerion angustifolium</i> (Rosebay willowherb)	✓	✓		
<i>Crataegus monogyna</i> (Hawthorn)	✓	✓		
<i>Pteridium aquilinum</i> (Bracken)	✓	✓		
<i>Rubus fruticosus</i> agg. (Bramble)	✓	✓		
<i>Urtica dioica</i> (Common nettle)	✓	✓		
<i>Buddleja davidii</i> (Butterfly bush)		✓		
<i>Calystegia sepium</i> (Bindweed)		✓		



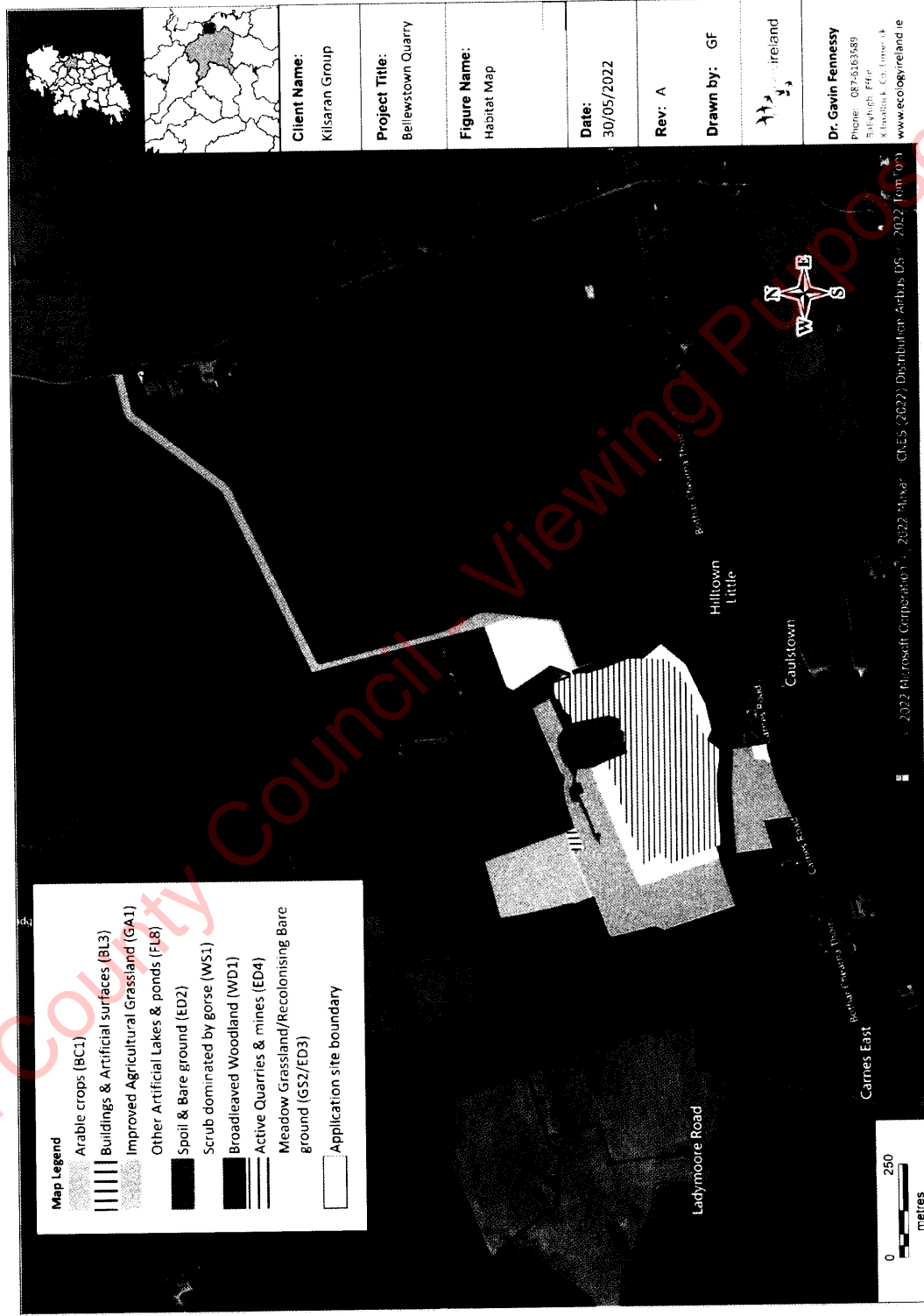
Plant Species	Broadleaved woodland (WD1)	Scrub (WS1)	Improved Grassland (GA1)	Meadow grassland (GS2)/disturbed ground
<i>Sorbus aucuparia</i> (Rowan)		✓		
<i>Ulex europaeus</i> (Common gorse)		✓		
<i>Agrostis capillaris</i> (Common bent)			✓	
<i>Anthoxanthum odoratum</i> (Sweet vernal grass)			✓	
<i>Cerastium fontanum</i> (Common mouse-ear)			✓	
<i>Cirsium arvense</i> (Creeping thistle)			✓	
<i>Cirsium vulgare</i> (Spear thistle)			✓	
<i>Cynosurus cristatus</i> (Crested Dog's tail)			✓	
<i>Plantago lanceolata</i> (Ribwort plantain)			✓	
<i>Phleum pratense</i> (Timothy)			✓	
<i>Plantago major</i> (Greater plantain)			✓	
<i>Poa annua</i> (Annual meadow grass)			✓	
<i>Poa pratensis</i> (Common meadow-grass)			✓	
<i>Lolium perenne</i> (Perennial rye-grass)			✓	
<i>Prunella vulgaris</i> (Self heal)			✓	
<i>Ranunculus acris</i> (Meadow buttercup)			✓	
<i>Ranunculus repens</i> (Creeping buttercup)			✓	
<i>Rhytidiadelphus squarrosus</i> (A moss)			✓	
<i>Rumex acetosa</i> (Sorrel)			✓	
<i>Rumex crispus</i> (Curled dock)			✓	
<i>Senecio jacobea</i> (Ragwort)			✓	
<i>Stellaria media</i> (Chickweed)			✓	
<i>Taraxacum officinale</i> (Dandelion)			✓	
<i>Trifolium pratense</i> (Red clover)			✓	
<i>Trifolium repens</i> (White clover)			✓	
<i>Rumex obtusifolius</i> (Broad-leaved dock)			✓	
<i>Holcus lanatus</i> (Yorkshire Fog)			✓	✓
<i>Hypochoeris radicata</i> (Cat's paw)			✓	✓
<i>Agrostis stolonifera</i> (Creeping bent)				✓
<i>Alopecurus geniculatus</i> (Marsh foxtail)				✓
<i>Arrhenatherum elatius</i> (False oat-grass)				✓
<i>Carex flacca</i> (Glaucous sedge)				✓
<i>Calliergonella cuspidata</i> (A moss)				✓
<i>Centaurea nigra</i> (Common knapweed)				✓
<i>Cerastium glomeratum</i> (Sticky mouse ear)				✓
<i>Dactylis glomerata</i> (Cock's foot)				✓
<i>Equisetum arvense</i> (Field horsetail)				✓
<i>Epilobium hirsutum</i> (Hairy willowherb)				✓
<i>Festuca rubra</i> (Red fescue)				✓
<i>Juncus inflexus</i> (Hard rush)				✓



Plant Species	Broadleaved woodland (WD1)	Scrub (WS1)	Improved Grassland (GA1)	Meadow grassland (GS2)/disturbed ground
<i>Juncus conglomeratus</i> (Compact rush)				✓
<i>Juncus articulatus</i> (Jointed rush)				✓
<i>Juncus bufonius</i> (Toad rush)				✓
<i>Lathyrus pratensis</i> (Meadow vetchling)				✓
<i>Leucanthemum vulgare</i> (Ox eye daisy)				✓
<i>Lotus corniculatus</i> (Bird's foot refoil)				✓
<i>Medicago lupulina</i> (Black medick)				✓
<i>Potentilla anserina</i> (Silverweed)				✓
<i>Sagina procumbens</i> (Procumbent pearlwort)				✓
<i>Scleropodium purum</i> (A moss)				✓
<i>Sonchus asper</i> (Prickly sow-thistle)				✓
<i>Sonchus oleraceus</i> (Smooth sow thistle)				✓
<i>Tussilago farfara</i> (Colts foot)				✓
<i>Veronica arvensis</i> (Wall speedwell)				✓
<i>Veronica serpyllifolia</i> (Thyme-leaved speedwell)				✓
<i>Vicia sativa</i> (Common vetch)				✓

Table 6.5: Plant species list for the site indicating the main habitats in which they occur.

Figure 6.5: Habitat Map – application site, Bellewstown Quarry.





6.6.4 Mammal Assessment

The faunal usage of the site and surrounding area was assessed from desktop sources in combination with field surveys, including the deployment of wildlife trail cameras and passive bat detectors.

6.6.4.1 Non-Volant Mammals

Other than frequent observations and signs (droppings and burrows) of Rabbits, *Oryctolagus cuniculus*, there was no direct sightings made of any mammal species during the mammal walkover in 2020. Rabbits are ubiquitous at the site with sightings, tracks and droppings found at the active quarry and in the proposed extension area. Burrows are also present in both the existing and proposed extension areas.

Unsurprisingly, given the abundance of Rabbits at the site there were frequent signs of Fox, *Vulpes vulpes* (scat) recorded on each of the site walkovers. However, there was no den located anywhere within the application area. The study area contains suitable commuting, foraging, breeding and resting habitats for both species. Both Rabbit and Fox were recorded by camera traps (see Plate 6.6). Neither of these two mammal species are of high conservation concern in Ireland at present (see Marnell *et al.* 2009).

Deer are likely to regularly use the site. Fallow Deer, *Dama dama* were recorded during the camera survey (see Plate 6.7) but it is possible that other species of deer such as Sika Deer and Red Deer *Cervus elaphus*, occur locally, at least occasionally. Hybridisation of deer species also likely occurs in the area.

Badger, *Meles meles* was detected during walkover survey by the presence of a 'latrine' along the fenceline immediately east of the old quarry, but no setts were found to be present within the study area. No Badgers were recorded on the camera traps deployed at the site.

The application site is generally unsuitable for Otter, *Lutra lutra*. There is no significant watercourse within or closely adjacent to the proposed development site and the habitats present at the development site and adjoining lands are unattractive for this species.

The field surveys of Bellewstown Quarry that were carried out on dates in 2008, 2011, 2012 and 2015 at part of the Section 37L application recorded evidence of Brown Rat, *Rattus norvegicus*, Fox, Grey Squirrel, *Sciurus carolinensis*, Irish Hare, *Lepus timidus hibernicus* and Rabbit. Seven legally protected non-volant mammal species have been recorded in the 10km grid square in which the proposed development site is located (O06; NBDC). These are Badger, Pine Marten *Martes martes*, Red Deer, Irish Stoat (*Mustela erminea subsp. hibernica*), Irish Hare and Hedgehog *Erinaceus europaeus*.

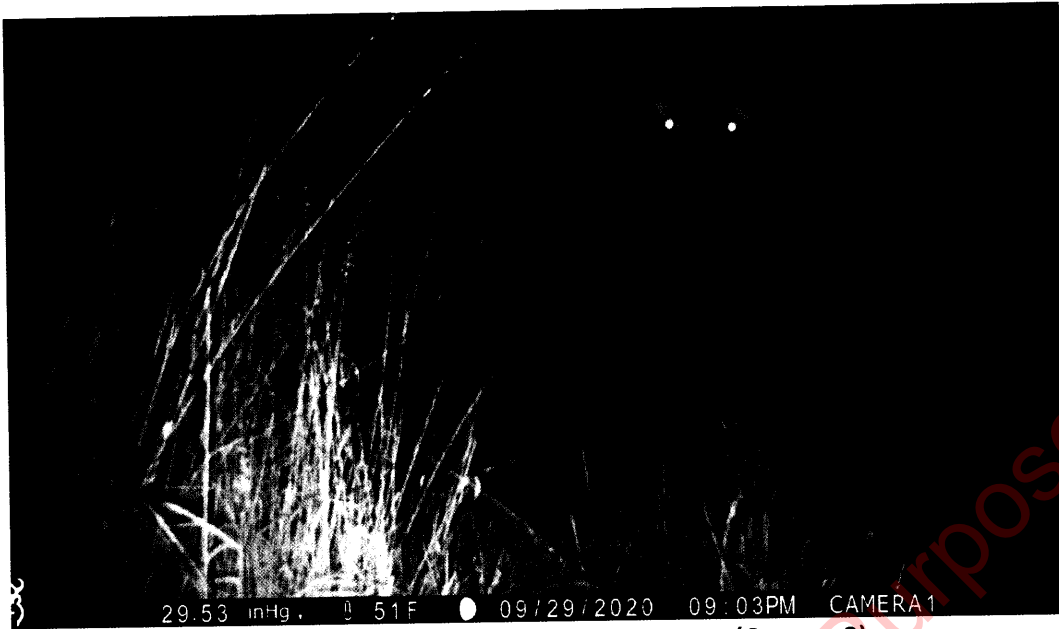


Plate 6.6: Fallow Deer recorded at the Bellewstown Quarry (Camera 2).

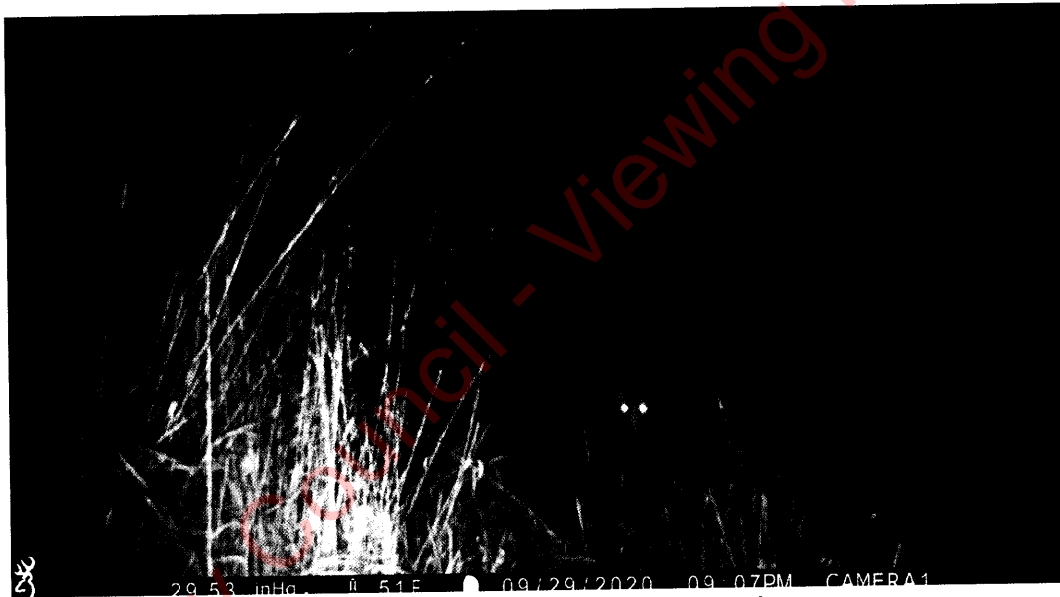


Plate 6.7: Fox recorded at the Bellewstown Quarry (Camera 2).

6.6.4.2 Bats

A visual site inspection was completed to assess the site potential to support bat roosts. No natural features likely to support roosting bats were located within the quarry site and new access track. Some mature and semi-mature Ash trees border the main road proximal to the existing site entrance and no potential roosting features were identified in these trees. A treeline occurs at the new proposed access point and trees here consisted of semi-mature and mature Sycamore and Ash (Plate 6.8). The trees within the zone of influence of the proposed works were considered for likely roosting potential, and no potential roosting features (PRFs) were identified.



The existing weighbridge office and workshop were subject to visual inspection to evaluate their suitability for roosting bats and to record any evidence of bat signs (droppings, staining, carcasses etc.). These structures were considered to have very low potential for roosting bats and no evidence of historic occupancy was recorded.

Passive detectors were deployed in locations likely to attract bats such as trees and hedgerows. Bats forage and commute using hedgerow corridors and woodland. Bat activity is influenced by weather conditions as heavy rain, strong winds and low temperatures create suboptimal foraging conditions.

Analysis of the passive bat detector registrations confirms the presence of four bat species (Table 6.6). Common Pipistrelle, *Pipistrellus pipistrellus*, Soprano Pipistrelle, *Pipistrellus pygmaeus*, Leisler's Bat, *Nyctalus leisleri* and Brown Long-eared Bat, *Plecotus auritus*. Leisler's Bat was the most commonly recorded species and accounted for 84% of all registrations largely owing to a particular peak in activity occurring on the 1st October 2020. Common Pipistrelle (11%) and Soprano Pipistrelle (5%) were also regularly recorded bat species on or adjacent to the site while Brown Long-eared Bat was recorded on two nights at deployment location 'Bat_2' (Figure 6.2).

Of the two survey locations Bat_2 recorded most activity: 602 registrations were recorded at Bat_2 while only 91 registrations were recorded at Bat_1 (Figure 6.2). Overall, the level of bat activity at the proposed site was found to be low. The proposed development site has habitats that generally present suboptimal foraging habitat for bats and a low to moderate diversity of bat species was recorded utilising the area. No patterns of (bimodal) activity were present in these data which would be indicative of proximity to a bat roosting site (see Figure 6.6 and Figure 6.7).

The 'Bat Landscapes' project (Lundy *et al.* 2011) modelled all Irish bat records available between 2000 and 2009 and used the information to make predictions about which areas are most attractive to bats, based on 5km grid squares. Overall, it is predicted that the relative importance of the 5km square in which the site is located is moderate (28.89), with low predicted value for the Annex II listed Lesser Horseshoe bat due to the area being outside the known range of this species (www.biodiversityireland.ie).

Seven species of bats have been recorded in the 10km grid squares in which the proposed site is located (O06; NBDC), namely Daubenton's bat (*Myotis daubentonii*), Natterer's Bat (*Myotis nattereri*), Leisler's bat (*Nyctalus leisleri*), Common pipistrelle (*Pipistrellus pipistrellus*) and Soprano Pipistrelle (*Pipistrellus pygmaeus*), Nathusius's Pipistrelle (*Pipistrellus nathusii*) and Brown Long-eared Bat (*Plecotus auritus*). The field surveys carried out at Bellewstown Quarry as part of the Section 37L assessment noted the presence of Common Pipistrelle, *Pipistrellus pipistrellus* in the area. However, it is not clear if there was any dedicated bat survey as part of these historic field surveys.



		Leisler's Bat	Common Pipistrelle	Soprano Pipistrelle	Brown Long-Eared Bat
Bat_1	25/09/2020	0	0	0	0
	26/09/2020	0	4	1	0
	27/09/2020	0	9	0	0
	28/09/2020	0	1	0	0
	29/09/2020	0	1	1	0
	30/09/2020	0	0	0	0
	01/10/2020	0	42	24	0
	02/10/2020	0	5	3	0
	03/10/2020	0	0	0	0
	04/10/2020	0	0	0	0
	Average Registrations per night	0	6.2	2.9	0
Bat_2	25/09/2020	0	0	0	1
	26/09/2020	1	1	0	0
	27/09/2020	3	1	0	0
	28/09/2020	1	4	3	2
	29/09/2020	0	0	0	0
	30/09/2020	1	0	1	0
	01/10/2020	539	4	2	0
	02/10/2020	20	1	0	0
	03/10/2020	0	0	0	0
	04/10/2020	15	2	0	0
	Average Registrations per night	58	1.3	0.6	0.3

Table 6.6: Number of bat registrations recorded at the two monitoring stations at the Bellewstown Quarry Site (September/October 2020.)

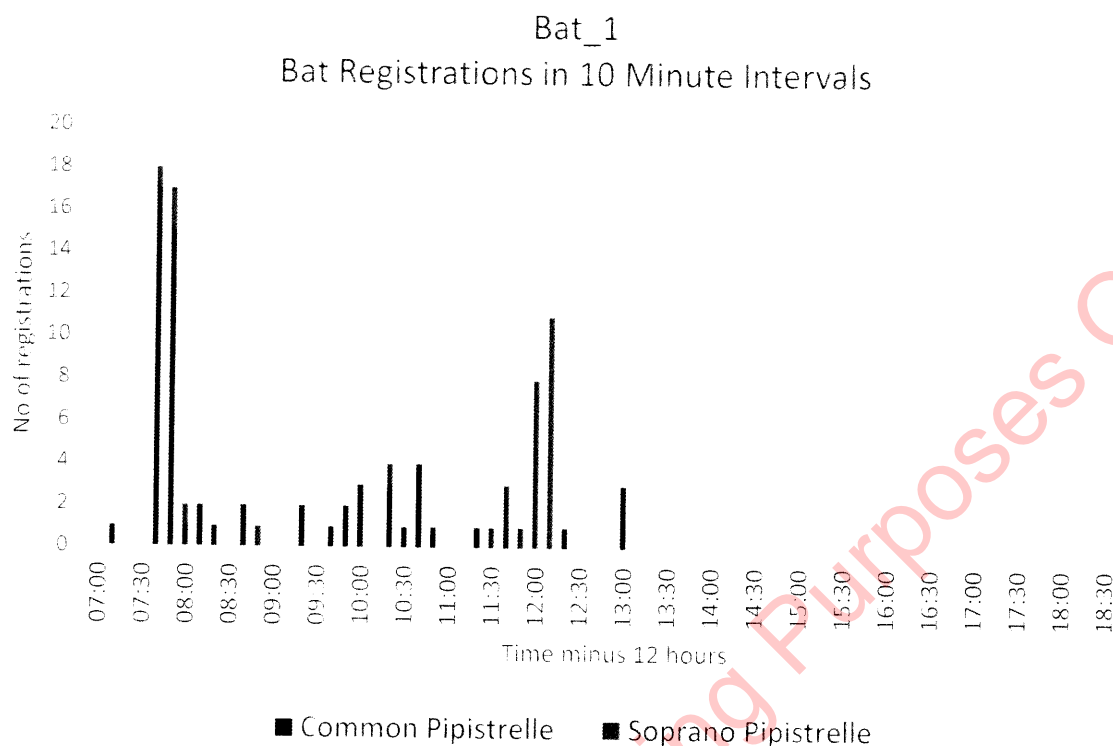


Figure 6.6: Temporal distribution of bat registrations from deployment location 'Bat 1'.

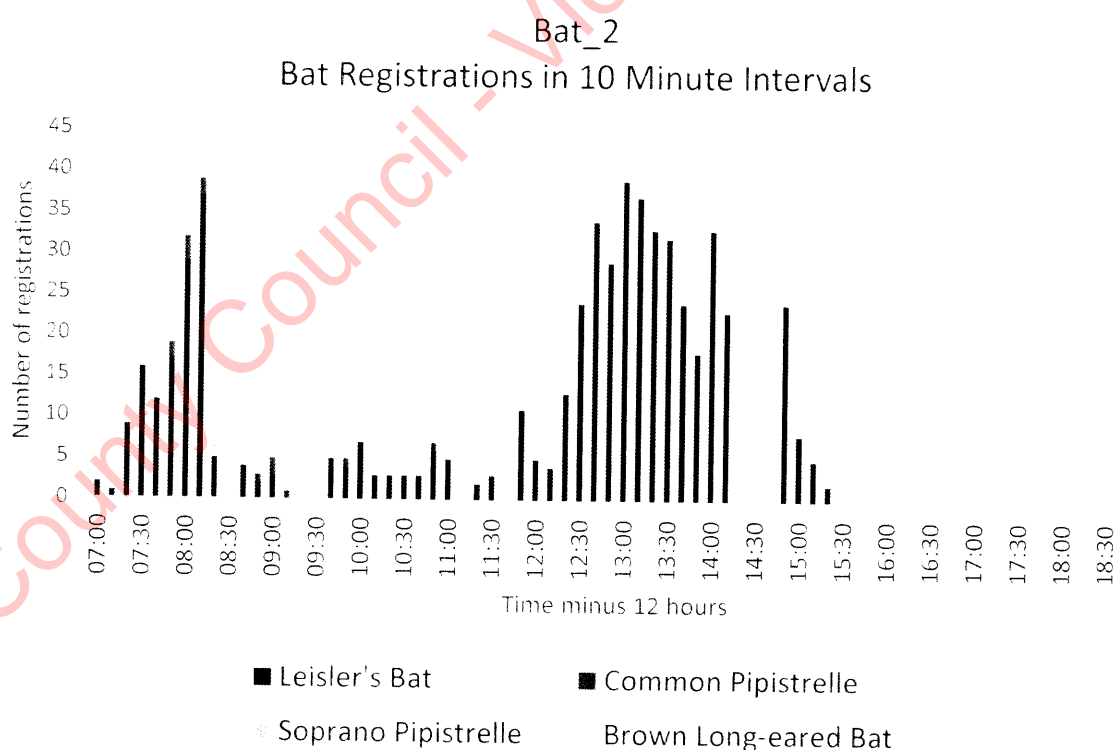


Figure 6.7: Temporal distribution of bat registrations from deployment location 'Bat 2'.



Plate 6.8: View of public road near proposed new access point to Bellewstown Quarry.

6.6.5 Avian Assessment

Table 6.7 summarises the bird species recorded at the site during the field survey visits between August and October 2020. In total, 23 bird species were recorded in the study area (Table 6.7) representing a fairly typical farmland bird assemblage. Table 6.7 also shows the current Birds of Conservation Concern in Ireland (BoCCI) status (Gilbert *et al.* 2021).

The greatest diversity of birds present was recorded associated with the hedgerows, trees and field boundaries within and in the vicinity of the application site. There were very few birds recorded from the open fields, including the arable field traversed by the proposed new access road. Three Buzzards, *Buteo buteo*, were observed soaring above the arable field and fields north of the current extractive area during the August 2020 walkover.

Three of the bird species recorded in the area during the site surveys are on the BoCCI Red-list: Kestrel, *Falco tinnunculus*, Meadow Pipit, *Anthus pratensis* and Yellowhammer, *Emberiza citrinella*. Kestrel and Yellowhammer have suffered declines in breeding population in recent decades are of current conservation concern across their European range. Meadow Pipit, while still a fairly common and widespread species has suffered similar declines, but over a shorter timeframe and is considered to be of global wide conservation concern. Meadow Pipit are ground nesting birds that are found in a wide variety of habitats from farmland to upland heath and bog. Three Amber-listed species were also recorded: Linnet, *Linaria cannabina*, Starling, *Sturnus vulgaris* and Swallow, *Hirundo rustica*.



No evidence of the presence of Peregrine Falcon, *Falco peregrinus* (including direct sightings, prey remains, white-wash staining) was recorded during any of the site visits. Peregrine Falcons frequently nest and roost at active quarries and Peregrine Falcon were recorded in the area, as part of the ecological surveys carried out to inform the assessment that accompanied the 37L application. The status of Peregrine Falcon nest sites frequently changes from year to year and there is suitable breeding and roosting habitat for the species at the quarry site. Similarly, while Sand Martins had been recorded in the area as part of previous site surveys, there was no evidence recorded of breeding Sand Martins recorded at the site as part of the current surveys.

Table 6.8 summarises the birds recorded at the site over the course of field surveys from 2008-2015 at the Bellewstown Quarry site. A total of 28 bird species were recorded. These included all three Red-listed bird species recorded at the site again in 2020. Two of the three Amber-listed bird species were also recorded at the site as part of the surveys for the 37L application. Linnet was not recorded in those surveys. In contrast, one additional Red-listed species was recorded at the quarry site at that time: Grey Wagtail, *Motacilla cinerea*.

The historic bird data previously recorded in the 2km grid squares in which the application site is located (O06T, O06Y & O06Z; NBDC) describes a relatively diverse avian community (see Table 7.9). A total of 39 species have been recorded. However, as these 2km Grid Squares overlap with watercourses not recorded at the quarry site the species list includes aquatic birds such as Mute Swan, *Cygnus olor* and Kingfisher, *Alcedo atthis*. Overall, 19 of the 23 species recorded at the site during the 2020 walkovers have been historically recorded in the wider area. The four species recorded in the current survey but not present in the historic record in the relevant 2km Grid Squares are Meadow Pipit, Kestrel, Linnet and Pheasant, *Phasianus colchicus*.



Blackbird	<i>Turdus merula</i>	Green-listed
Blue Tit	<i>Cyanistes caeruleus</i>	Green-listed
Buzzard	<i>Buteo buteo</i>	Green-listed
Chaffinch	<i>Fringilla coelebs</i>	Green-listed
Chiffchaff	<i>Phylloscopus collybita</i>	Green-listed
Collared Dove	<i>Streptopelia decaocto</i>	Green-listed
Goldfinch	<i>Carduelis carduelis</i>	Green-listed
Great Tit	<i>Parus major</i>	Green-listed
Hooded Crow	<i>Corvus cornix</i>	Green-listed
Jackdaw	<i>Corvus monedula</i>	Green-listed
Kestrel	<i>Falco tinnunculus</i>	Red-listed
Linnet	<i>Linaria cannabina</i>	Amber-listed
Magpie	<i>Pica pica</i>	Green-listed
Meadow Pipit	<i>Anthus pratensis</i>	Red-listed
Pheasant	<i>Phasianus colchicus</i>	Green-listed
Pied Wagtail	<i>Motacilla alba</i>	Green-listed
Robin	<i>Erithacus rubecula</i>	Green-listed
Rook	<i>Corvus frugilegus</i>	Green-listed
Starling	<i>Sturnus vulgaris</i>	Amber-listed
Swallow	<i>Hirundo rustica</i>	Amber-listed
Woodpigeon	<i>Columba palumbus</i>	Green-listed
Wren	<i>Troglodytes troglodytes</i>	Green-listed
Yellowhammer	<i>Emberiza citrinella</i>	Red-listed

Table 6.7: Avian species encountered (seen or heard) during walkovers of the application site.

Blackbird	<i>Turdus merula</i>	Green-listed
Blue Tit	<i>Cyanistes caeruleus</i>	Green-listed
Buzzard	<i>Buteo buteo</i>	Green-listed
Chaffinch	<i>Fringilla coelebs</i>	Green-listed
Coal Tit	<i>Parus ater</i>	Green-listed
Duncock	<i>Prunella modularis</i>	Green-listed
Great Tit	<i>Parus major</i>	Green-listed
Greenfinch	<i>Carduelis chloris</i>	Amber-listed
Hooded Crow	<i>Corvus cornix</i>	Green-listed
Grey Wagtail	<i>Motacilla alba</i>	Red-listed
House Sparrow	<i>Passer domesticus</i>	Amber-listed
Jackdaw	<i>Corvus monedula</i>	Green-listed
Kestrel	<i>Falco tinnunculus</i>	Red-listed
Magpie	<i>Pica pica</i>	Green-listed
Meadow Pipit	<i>Anthus pratensis</i>	Red-listed
Mistle Thrush	<i>Turdus viscivorus</i>	Green-listed



Peregrine Falcon	<i>Falco peregrinus</i>	Green-listed
Pheasant	<i>Phasianus colchicus</i>	Green-listed
Robin	<i>Erithacus rubecula</i>	Green-listed
Rook	<i>Corvus frugilegus</i>	Green-listed
Sand Martin	<i>Riparia riparia</i>	Amber-listed
Skylark	<i>Alauda arvensis</i>	Amber-listed
Song Thrush	<i>Turdus philomelos</i>	Green-listed
Starling	<i>Sturnus vulgaris</i>	Amber-listed
Swallow	<i>Hirundo rustica</i>	Amber-listed
Woodpigeon	<i>Columba palumbus</i>	Green-listed
Wren	<i>Troglodytes troglodytes</i>	Green-listed
Yellowhammer	<i>Emberiza citrinella</i>	Red-listed

Figure 6.8: Bird species recorded historically at the Bellewstown Quarry site.

Blackbird	<i>Turdus merula</i>	Green-listed	O06Y, O06Z
Blackcap	<i>Sylvia atricapilla</i>	Green-listed	O06Z
Blue Tit	<i>Cyanistes caeruleus</i>	Green-listed	O06Y, O06Z
Bullfinch	<i>Pyrrhula pyrrhula</i>	Green-listed	O06Z
Buzzard	<i>Buteo buteo</i>	Green-listed	O06T, O06Y, O06Z
Chaffinch	<i>Fringilla coelebs</i>	Green-listed	O06Z
Chiffchaff	<i>Phylloscopus collybita</i>	Green-listed	O06Z
Coal Tit	<i>Periparus ater</i>	Green-listed	O06Y, O06Z
Collared Dove	<i>Streptopelia decaocto</i>	Green-listed	O06Z
Duncock	<i>Prunella modularis</i>	Green-listed	O06Z
Goldcrest	<i>Regulus regulus</i>	Amber-listed	O06Y, O06Z
Goldfinch	<i>Carduelis carduelis</i>	Green-listed	O06Y
Great Tit	<i>Parus major</i>	Green-listed	O06Y, O06Z
Greenfinch	<i>Carduelis chloris</i>	Amber-listed	O06Z
Grey Heron	<i>Ardea cinerea</i>	Green-listed	O06Z
Hooded Crow	<i>Corvus cornix</i>	Green-listed	O06Y, O06Z
House Martin	<i>Delichon urbicum</i>	Amber-listed	O06Y, O06Z
House Sparrow	<i>Passer domesticus</i>	Amber-listed	O06Y, O06Z
Jackdaw	<i>Corvus monedula</i>	Green-listed	O06Y
Kingfisher	<i>Alcedo atthis</i>	Amber-listed	O06Z
Magpie	<i>Pica pica</i>	Green-listed	O06Y, O06Z
Mistle Thrush	<i>Turdus viscivorus</i>	Green-listed	O06Z
Moorhen	<i>Gallinula chloropus</i>	Green-listed	O06Z
Mute Swan	<i>Cygnus olor</i>	Amber-listed	O06Z
Pied Wagtail	<i>Motacilla alba</i>	Green-listed	O06Z
Robin	<i>Erithacus rubecula</i>	Green-listed	O06Z
Rook	<i>Corvus frugilegus</i>	Green-listed	O06T, O06Y, O06Z
Skylark	<i>Alauda arvensis</i>	Amber-listed	O06Z



Song Thrush	<i>Turdus philomelos</i>	Green-listed	O06T, O06Z
Sparrowhawk	<i>Accipiter nisus</i>	Green-listed	O06Y
Spotted Flycatcher	<i>Muscicapa striata</i>	Amber-listed	O06T, O06Z
Stock Dove	<i>Columba oenas</i>	Red-listed	O06Z
Swallow	<i>Hirundo rustica</i>	Amber-listed	O06Z
Swift	<i>Apus apus</i>	Red-listed	O06Z
Tree Sparrow	<i>Passer montanus</i>	Amber-listed	O06T
Treecreeper	<i>Certhia familiaris</i>	Green-listed	O06Z
Woodpigeon	<i>Columba palumbus</i>	Green-listed	O06T, O06Z
Wren	<i>Troglodytes troglodytes</i>	Green-listed	O06Z
Yellowhammer	<i>Emberiza citrinella</i>	Red-listed	O06T, O06Y, O06Z

Table 6.9: Bird species recorded historically in the 2km squares the encompass the application site (NBDC).

Other than pest species certain gamebirds and alien bird species, Irish birds are protected under the Wildlife Acts (1976 - 2012), where it is an offence to hunt, interfere with or destroy their breeding or resting places (unless under statutory licence/ permission).

6.6.6 Other Taxa

Common Frog *Rana temporaria* was recorded during walkover surveys in the field south of the extraction area close to the broadleaved woodland. Three species of Butterfly were noted as casual observations during the walkovers: Small Tortoiseshell, *Aglais urticae*, Green-veined White, *Pieris napi* and Meadow Brown, *Maniola jurtina*. The other taxa recorded at the site historically are summarised in Table 6.10.

Common Frog	<i>Rana temporaria</i>
Common Blue	<i>Polyommatus icarus</i>
Green-veined White	<i>Pieris napi</i>
Large White	<i>Pieris brassicae</i>
Meadow Brown	<i>Maniola jurtina</i>
Small Tortoiseshell	<i>Aglais urticae</i>
Small White	<i>Pieris rapae</i>
Speckled Wood	<i>Pararge aegeria</i>

Table 6.10: Other taxa recorded on site as part of the historic field surveys 2008-2015.

No near threatened or endangered invertebrate fauna have been recorded historically in the three 2km Grid Squares in which the application site is located (NBDC). Similarly, there are no records of Common Lizard, *Zootoca vivipara* or Smooth Newt, *Lissotriton vulgaris* from this area.



6.7 Potential Ecological Impacts

Potential ecological impacts of the proposed development on the receiving environment are discussed below. A full description of the proposed development is provided in Chapter 3 of this EIAR.

6.7.1 Potential Impacts on Designated Conservation Sites

Designated conservation sites include Natural Heritage Areas (NHAs), Proposed Natural Heritage Areas (pNHAs), Special Areas of Conservation (SACs), Special Protection Areas (SPAs), Nature Reserves and other Refuges for Fauna. SACs and SPAs are European designated nature conservation sites that have been designated under the EU Habitats Directive (92/43/EEC) and the EU Birds Directive (2009/147/EC) respectively. SACs and SPAs are collectively known as Natura 2000 sites and are legally protected by Irish law. NHAs are legally protected by the Irish Wildlife Acts (1976 as amended), but pNHAs are not and only have limited protection through recognition by planning/licensing/forestry authorities and agri-environmental schemes. Nature Reserves and Refuges for Fauna are protected under the Irish Wildlife Acts (1976-2012). Many designated sites overlap, e.g. a site can be designated as both an NHA and SAC.

Potential impacts e.g. through hydrological effects on groundwater and/or contaminated surface water run-off are considered in detail. It is concluded that the embedded environmental controls and dedicated mitigation measures described in this EIAR (and accompanying NIS) will be effective in addressing these risks such that there is negligible residual risk of impact upon these Natura 2000 sites.

6.7.2 Potential Impacts on Habitats and Flora

Potential impacts on habitats and flora as a result of the proposed quarry extension are discussed below, for the construction and operational phases.

The habitats and vegetation which occur within the survey area are generally considered to be of relatively low botanical value and none of the plant species recorded within the survey area are listed on the 2015 Flora Protection Order and none are considered to be rare in a local context. The habitats which occur have a low botanical diversity and are considered to be common and widespread throughout Ireland (Fossitt 2000). None of the habitats which were recorded correspond to ecologically important habitats listed in Annex I of the EU Habitats Directive (European Commission, 2013).

The main effect of the proposed development, i.e. quarry enlargement and access road construction, will be the loss of areas of improved agricultural grassland, arable land and gorse scrub, which mostly lie to the north and west of the current quarry area. These areas of habitat are considered to be of relatively low botanical/ecological interest and the losses are not considered to be significant. A small area of meadow grassland and recolonizing bare ground to the east of the active quarry area will also be affected by access road construction. The areas of broadleaved woodland, most of which have been established for screening purposes along the margins of the current quarry area, will be retained.



6.7.2.1 Restoration Phase Impacts

The proposed restoration will result in a (continued) phased restoration of the currently active areas of the quarry according to the restoration plan. The landscaping plan is described in detail in Chapter 11 of the EIAR. It will see the establishment and maintenance of substantial areas of low-canopy woodland mix and hedgerow.

Post-closure the development will ultimately result in a quarry lake area with landscaped marginal planting. This quarry pond has the potential to be of at least moderate local biodiversity value attracting species such as Swallow, House Martin and Sand Martin over time. It also has the potential to attract waterbirds, particularly in the winter months.

6.7.3 Potential Impacts on Non-Volant Mammals

No setts, holts or dens are present on site and the mammal fauna recorded to be present are common species in an Irish context and typical of an assemblage of species likely to be found in such a site. The proposed extraction area is of generally low ecological value. The field boundaries have some local resource value for commuting and foraging mammals and as providing burrowing sites.

The loss of pastoral habitat to facilitate the proposed extension will result in some reduced foraging opportunities for mammals, particularly rabbits and deer. Similar foraging habitats for both species are widely represented in the surrounding landscape so that any localised losses will have an insignificant impact on the populations. The loss of tillage habitat to facilitate the proposed access road will result in negligible loss of foraging opportunities for mammals. The phased restoration of the excavated areas is likely to create replacement habitats, of a similar nature to that currently present, for mammals to use as the vegetation matures in the medium term.

Any projects with deep excavation, settlement ponds and a sump have some limited potential to entrap and drown terrestrial mammals. There is no evidence from the operational quarry that any such issues have arisen. Water collected in the sump is pumped for on-site treatment. Local mammals quickly habituate to the presence of standing water which may in fact provide foraging and drinking opportunities to certain species.

In terms of disturbance impacts, the rate of extraction proposed for the extended quarry approximates to the current level and therefore it is not expected that the amount of activity associated quarrying will be significantly different from that experienced at present. During soil stripping and restoration works the level of activity will be somewhat higher and the potential for displacement and disturbance of mammals is somewhat greater than at other times.

6.7.4 Potential Impacts on Bats

Analysis of bat survey data shows a relatively poor diversity of species and a low level of overall bat activity in the area. There was no evidence of roosting bats anywhere within, or adjacent to the application site. of species were recorded and these are all are common and widespread species in Ireland. The most commonly recorded species was Leisler's Bat which



is Ireland's largest bat being the strongest flying species and less reliant on linear vegetated features for foraging and commuting purposes than many of the Irish bat species.

The trees and hedgerows adjoining the proposed site are likely used by commuting and foraging bats and disturbance to these features has the potential to reduce landscape connectivity for bats. Disturbance to these features could arise directly (through removal), or indirectly (through light or noise impacts etc.). No roosting features were identified in trees or hedgerows which will be directly affected by the proposed development. The structures proposed to be demolished as part of this development were surveyed and there was no evidence of current or historic occupancy by bats.

6.7.5 Potential Impacts on Birds

The avian community recorded at the site and in adjoining areas was entirely typical of the range of habitats present. Some of the higher conservation value species e.g. Yellowhammer and Linnet were associated with the arable crop in the local area and are unlikely to be impacted by the proposed development. Within the existing quarry and proposed extension area there is limited breeding and foraging habitat for birds. Much of the local species diversity was either associated with adjoining farmland or the belt of screening broadleaved trees that will be unaffected by the proposed development.

The loss of some open field and vegetated areas within the application site associated with the quarry extension and new access track may result in localised medium-term disturbance effects on the bird community present, primarily through reduced feeding opportunities. However, the vegetated areas in question are of moderate to low value for birds overall and similar habitats are widely represented in the surrounding area so that affected birds can alternatively use the wider area.

Birds associated with aquatic habitats in the wider area could be negatively affected by a proposed development through hydrological or water quality impacts such as increased siltation, nutrient release, contaminated run-off and/or wind-blown sand arising from the development works. This requires connectivity between the works area and the surrounding aquatic habitats. There is no evidence from field or desktop data that any such impacts have arisen in the past in association with the operation of the quarry at this location.

Ongoing works at the quarry has the potential to cause disturbance to the bird community through displacement especially during clearance activities, blasting and other construction activities, with associated increased human presence and noise. Studies on bird displacement due to disturbance have yielded somewhat inconsistent and inconclusive results (Percival 2003, Langston & Pullan 2003 & 2004, Kingsley & Whittam 2005, Drewitt & Langston 2006). These studies have indicated that the scale of disturbance varies greatly between and within species (Percival 2003, Langston & Pullan 2003 & 2004, Kingsley & Whittam 2005, Drewitt & Langston 2006). Disturbance effects can result in reduced numbers of birds within a particular distance from a source of disturbance.

Although, Peregrine Falcon was not recorded at the quarry site during the field surveys in 2020 the species has been recorded at the site in the past and there is suitable nesting and roosting habitat present on the excavated rock-faces. Peregrines are relatively tolerant of activity at quarries and breed successfully at a number of large and very active quarries throughout Ireland (pers obs.), as well as being present at dormant and former quarry sites. The presence



of suitable habitat at the quarry makes it likely that the species will occur at the site, at least occasionally. There is some potential to disturb and displace nesting and roosting Peregrines, where present. However, this is amenable to mitigation and this is discussed in Section 6.7.4 below.

Due to the generally low value of the application area for birds in general, potential impacts in birds arising from operations associated with the proposed development are considered as slight to imperceptible neutral. In the long-term the quarry restoration process will result in areas of landscaping surrounding a quarry lake. This quarry lake has in-time the potential to be attractive to waterbirds that do not currently occur at the site. Other similar quarry lakes have become important areas for biodiversity (e.g. Odonata).

6.7.6 Potential Impacts on Other Taxa

The construction activities have the potential to impact upon aquatic habitats at and downstream of the site. These aquatic habitats, and fauna associated with them, could be affected negatively through increased siltation, contaminated run-off, fuel spills or subtler effect on hydrogeology. It is noted however that there is no evidence that the current quarrying operations have resulted in any negative downstream impact and the current water treatment regimen on site appears to be functioning well.

However, in the absence of environmental controls, run-off and siltation to watercourses could potentially lead to adverse impacts upon such aquatic species. The implementation of the site restoration plan associated with the development will, in the long-term, create new habitats for other taxa to use and take refuge in as the vegetation matures.

6.7.7 Do-Nothing Impact

The do-nothing scenario is the continued extraction of the active quarry area until it is exhausted, prior to restoration and closure. The agricultural lands proposed as an extension to the quarry site would remain in agricultural use.

The overall impact would be expected to be highly localised and in the short to medium term there would be very little perceptible change in the local ecology. In the longer term there is some potential for the revegetated quarry to be an increasing area of local biodiversity, particularly with some scrub encroachment and areas of semi-natural habitat.

6.7.8 Cumulative Impacts

There will be improvements to the local road infrastructure arising from a successful grant of planning permission for the proposed development. The nature of these works and the design and management of any associated environmental controls will be agreed with the local authority. The public roadworks envisaged are relatively small in scale and will be carried out by Kilsaran under licence from Meath County Council's and on the Local Authority's behalf in accordance with the *Roads Act, 1993* (as amended) in the event of a grant of permission for the proposed development.



There are no other known permitted or proposed developments in the local area that are likely to act in combination with the proposed development.

6.8 Avoidance, Mitigation & Enhancement Measures

The project has included in its design 'Mitigation by Avoidance' and environmental control measures as outlined below to address potential environmental impacts arising from the proposed quarry extension. Opportunities for ecological enhancement measures are also identified. All mitigation identified in other Chapters of the EIAR will be fully implemented, including those elements designed to control run-off and to prevent any pollution of soil, surface or ground-water.

6.8.1 Designated Conservation Sites

A Screening for AA was prepared to consider if there were any likely significant effects on any Natura 2000 site(s) arising from the proposed development. Chapter 8 (Water – Surface and Groundwater) of the EIAR showed that there was minimal risk of any damaging run-off occurring to any of the watercourses downstream of the site. However, it is acknowledged that in the absence of any mitigation there is an appreciable risk of run-off from the site to watercourses connected with the River Nanny Estuary & Shore SPA.

A precautionary approach has been applied and appropriate mitigation to minimise this potential risk to the SPA and its Conservation Objectives is presented in the NIS that accompanies this application. The mitigation and design elements (Mitigation by Avoidance) that contribute to the conclusion that there is no potential for residual adverse impacts upon any Natura 2000 sites arising from the development are detailed below and in the NIS itself. Chapter 16 of the NIS summarises overall mitigation commitments associated with the proposed development. Key commitments in relation to addressing the risk of run-off to watercourses hydrologically connected to the River Nanny Estuary & Shore SPA are contained in Chapter 8 of the EIAR. The mitigation measures to address the risk of damaging run-off to watercourses and/or contamination of the groundwater are described in detail in Chapter 8 of the EIAR.

6.8.2 Habitats and Flora

- New hedgerow will be established, including along one side of the new access track (see Chapter 11 of the EIAR). The hedgerows will be planted with native trees and hedgerow plants with a grassy verge that will be maintained according to the guidance in the All-Ireland Pollinator Plan (www.polinators.ie). This will include delayed and reduced mowing and use of pesticides.
- The broadleaved trees that act as screening from residences south of the quarry will be retained.
- As part of future quarry development there will be planting of additional areas of low canopy broadleaved woodland along the margins of the site for screening purposes. Excavated soil from the site will be deposited along the newly created quarry perimeter and broadleaved woodland will be established. This will result in the establishment of significant areas of additional broadleaved planting along the western and northern



margins of the quarry area. This additional planting will add to the ecological value of the site over time with native tree/shrub species such as birch (*Betula* sp.), pedunculate oak (*Quercus robur*), alder (*Alnus glutinosa*) and hawthorn (*Crataegus monogyna*) the main species to be established.

6.8.3 Mammals

- Construction operations (including extraction and restoration) will take place between 0800-1800 to minimise disturbances to roosting birds and mammals and birds active in the nocturnal/crepuscular period.
- The quarry will not be lit at night (with the exception of low-level switchable safety lighting). All non-essential lighting will be switched off during the hours of darkness.
- A pre-construction mammal survey will be carried out by a suitably qualified ecologist immediately before the commencement of vegetation clearance. This will identify any change in the usage of the site, particularly regarding the presence of any protected breeding or resting sites, in the period between the submission of the planning application and the commencement of associated site works.
 - This will include a contemporary assessment of the structures scheduled for demolition in the period immediately prior to these works – to confirm that no roosting bats are present. In the unlikely event that bats are present, demolition will not continue until such time as a derogation licence has been obtained and under the supervision of a suitably qualified bat specialist.
- Although no bat roosts are likely to be lost as a result of the proposed works, in order to enhance bat roosting opportunities locally as a result of the proposed works a minimum of 10 artificial bat roosts (bat-boxes) will be installed at suitable locations around the margins of the land-holding. As recommended in Kelleher *et al.* (2006) 'woodcrete' bat boxes will be used as they are durable and long-lasting and do not require maintenance. A mixture of bat-box types will be used to cater for seasonal and species requirements. The following products (or similar) will be installed in consultation with a suitably qualified ecologist:
 - 4 x Schwegler 1FS Colony Bat Box 95
 - 4 x Schwegler 2F Universal Bat Box
 - 2 x Schwegler 2FN Bat Box 55
- Selection of locations for bat boxes will be decided with cognisance of the following:
 - Bat boxes will be installed at a minimum height of 4 meters above ground level, and in locations which are inaccessible to unaided climbing (to minimise risk of vandalism).
 - Boxes will be clustered with a minimum of two boxes on each chosen erection site.
 - Locations will be chosen which are not particularly vulnerable to artificial light or noise pollution.
 - Boxes will be installed so that they have southern or westerly aspects and preferably in locations where they will receive some direct sunlight.



Bat boxes will be monitored approximately 12 months following installation, Data on any confirmed roosts will be provided to the National Biodiversity Data Centre (NBDC).

6.8.4 Birds

- Subject to other environmental concerns (e.g. run-off), the removal of grassland, scrub and field boundary vegetation will be undertaken outside of the bird breeding season (March 1st to August 31st inclusive). This will minimise the potential of disturbance of nesting birds.
- The southern quarry faces are to be retained (post-restoration) to provide attractive habitat for species such as Peregrine Falcon in perpetuity.
- 10 bird boxes will be erected around the margins of the land-holding, particularly in the broadleaved woodland south of the extractive area.
 - These boxes will be selected and erected under the supervision of a qualified ecologist and monitored and maintained annually.

6.8.5 General Environmental Measures

- Topsoil will be stored in appropriate areas within the site and will be kept separate from other site material (e.g. stone/sub-soil). The revegetating topsoil stockpiles will be included in the annual monitoring.
- All edible and putrescible wastes will be stored and disposed of in an appropriate manner.
- Industry standard Environmental control measures relating to soil management and water management, will be implemented to minimise the risk of impact surface water and groundwater in the area. For example, the use of bunded storage of fuels and regular inspection and maintenance of vehicles on-site will minimise the risk of any spillages of fuel and other hydrocarbons. All vehicles on-site will be equipped with spill-kits and all site personnel will be trained in their correct use.
- The water treatment settlement pond will be inspected and maintained to ensure that it does not silt-up and is functioning as intended.
- Measures to suppress wind-blown broadcast of dust will be implemented as necessary including use of sprinklers/water bowsers when required.

6.8.6 Monitoring

- Walkovers of the site will be carried out by an Ecologist to monitor the development process in Years 1 & 5 of operation of the extended quarry to ensure that the measures outlined above are effective and being implemented correctly. Survey reports will be prepared and submitted for the attention of Meath County Council.
 - The presence of any invasive species will be mapped, and the Ecologist will provide advice on appropriate biosecurity and eradication measures.



- A site wildlife log will be maintained by the site manager, with any records or sightings of protected species noted. In particular, there will be vigilance for the potential occurrence of Peregrine Falcon at the quarry site. Should the presence of roosting, or nesting Peregrine be recorded on-site, advice will be sought from a suitably qualified ecologist. In the event of breeding Peregrine Falcon being present at the quarry the environmental manager will inform local NPWS of the presence of a nesting pair and the breeding activity will be monitored by an ecologist through to the conclusion of the nesting period.
- The bat-boxes will also be inspected in Year 5 of operation.

6.9 Residual Impacts

The residual negative impacts on habitats and associated species in the wider area are considered, *neutral imperceptible* in the long term. Potential impacts on habitats and botanical species at the site are regarded as neutral to slight negative as the restoration aims of the quarry are achieved and surrounding hedgerows/treelines are preserved in the long-term.

Potential impacts on bats at the site are regarded as neutral as the hedgerows are preserved and artificial roosting opportunities provided.

In addition, the mitigation by design and standard environmental controls (e.g. Chapter 8 of the EIAR) will minimise any direct or indirect negative effects (to neutral imperceptible) on the wider aquatic ecology. The accompanying NIS concludes that with implementation of the mitigation outlined that there is no potential for residual adverse impacts upon River Nanny Estuary & Shore SPA or any other Natura 2000 sites in the wider hinterland.

With the implementation of the environmental controls, mitigation and proposed enhancement measures (as well as the restoration and landscaping plan) it is concluded that the residual impacts on birds, mammals (including bats) and other fauna will be highly localised and *slight* negative in the short-medium term and *neutral imperceptible* in the medium-longer term.



6.10 References

- Andrews, J. & Kinsman, D. 1990. *Gravel pit restoration for wildlife*, Royal Society for the Protection of Birds (RSPB).
- Bang, P. & Dahlstrom, P. 2004. *Animal Tracks and Signs*. Oxford University Press, Oxford.
- Bibby, C. J., Burgess, N. D., Hill, D. A. & Mustoe, S. H. 2000. *Bird Census Techniques* (2nd Edition). Academic Press, London.
- Clark, M. 1988. *Badgers*. Whittet Books, London.
- Curtis T.G.F. & McGough H.N. 1988. *The Irish Red Data Book 1 Vascular Plants*. Stationery Office, Dublin.
- Department of Environment, Heritage & Local Government 2009. *Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities*. DoEHLG, Dublin.
- European Commission 2001. *Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites – European Commission Methodical Guidance on the provisions of Article 6(3) and 6(4) of the 'Habitats' Directive 92/43/EEC*. European Commission DG Environment, Oxford UK.
- Environmental Protection Agency 2003. *Advice Notes on Current Practice (in the preparation of Environmental Impact Statements)*. EPA, Wexford.
- Environmental Protection Agency 2015. *Draft Revised Guidelines on the Information to be Contained in Environmental Impact Assessments (September 2015)*, EPA, Wexford.
- Fitzpatrick, U., Murray, T.E., Byrne, A., Paxton, R.J. & Brown, M.J.F. 2006. *The Regional Red List of Irish Bees*. Queens University Belfast, Northern Ireland.
- Fossitt, J. 2000. *A Guide to Habitats in Ireland*. The Heritage Council, Ireland
- JNCC 2004. *Common Standards Monitoring Guidance for Terrestrial Mammals*, Version August 2004, ISSN 1743-8160
- Lewis, L. J., Coombes, D., Burke, B., O'Halloran, J., Walsh, A., Tierney, T. D. & Cummins, S. 2019. *Countryside Bird Survey: Status and trends of common and widespread breeding birds 1998-2016*. Irish Wildlife Manuals, No. 115. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht, Ireland.
- Lockhart, N., Hodgetts, N. and Holyoak, D. 2012. *Ireland Red List No.8: Bryophytes*. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.
- Lundy, M.G., Aughney, T., Montgomery, W.I. & Roche, N. 2011. *Landscape Conservation for Irish Bats & Species Specific Roosting Characteristics*. Bat Conservation Ireland.
- Marnell, F., Kingston, N. and Looney, D. 2009. *Ireland Red List No. 3, Terrestrial Mammals*. National parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin, Ireland.



Muldoon, C.S., Waldren, S. and Lynn, D. 2015. *Monitoring recommendations for Marsh Saxifrage (Saxifraga hirculus L.) in the Republic of Ireland. Irish Wildlife Manuals, No. 88.* National Parks and Wildlife Service, Department of the Arts, Heritage and the Gaeltacht, Ireland.

Nairn, R. & Fossitt, J. 2004. *The Ecological Impacts of Roads, and an Approach to their Assessment for National Roads Schemes.* In: J. Davenport & J.L. Davenport (eds) *The Effects of Human Transport on Ecosystems: Cars and Planes, Boats and Trains*, 98-114. Royal Irish Academy, Dublin.

Nelson, B., Ronayne, C. & Thompson, R. 2011. *Ireland Red List No.6: Damselflies & Dragonflies (Odonata).* National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin, Ireland.

NRA 2006. *Guidelines for the Treatment of Bats during the Construction of National Road Schemes.* National Roads Authority, Dublin.

Percival, S. 2003. *Birds and windfarms in Ireland: a review of potential issues and impact assessment.* pp. 1-25.

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

Smith, A.J.E. 1978. *The Moss Flora of Britain and Ireland.* Cambridge University Press.

Stace, C. 1991. *New Flora of the British Isles.* Cambridge University Press, Cambridge.

Sutherland W.J (Ed.) 1996. *Ecological Census Techniques, a Handbook.* Cambridge, UK.



APPENDIX 6.1: NATURA IMPACT STATEMENT OF BELLEWSTOWN QUARRY, CO. MEATH.

Meath County Council - Viewing Purposes Only!