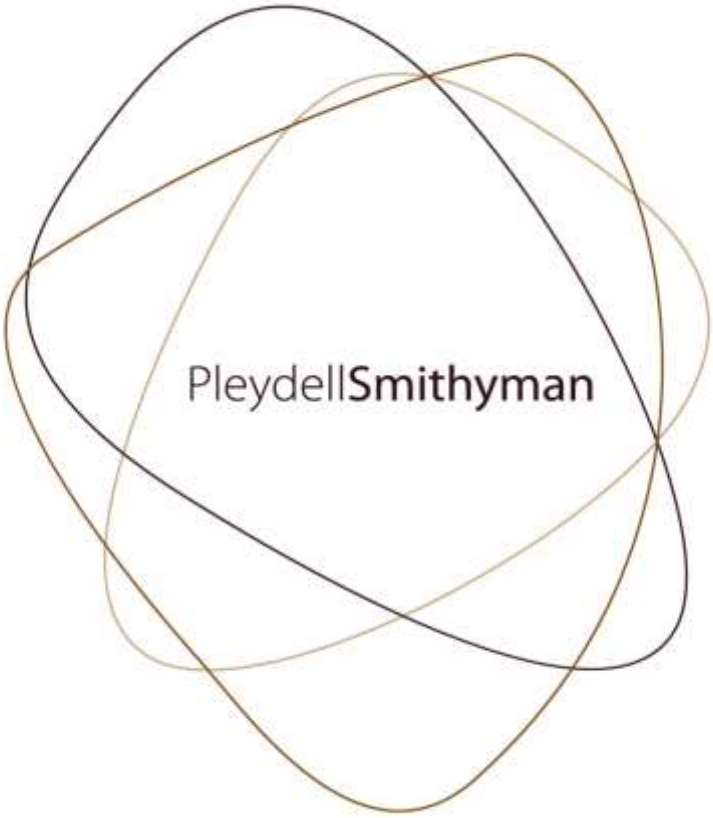

ECOLOGICAL IMPACT ASSESSMENT

RELATING TO LAND AT THE PROPOSED WESTERN EXTENSION AT

DENBIGH QUARRY, DENBIGHSHIRE

APPLICATION FOR PLANNING PERMISSION

For Breedon Southern Limited

September 2021

PSL Report Reference Number: M18.155.R.015

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ECOLOGICAL IMPACT ASSESSMENT
ON LAND AT
DENBIGH QUARRY,
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Drawing Number	Drawing Title
M18.155.D.014	Preliminary Ecological Appraisal

Appendix Number	Appendix Title
1	Preliminary Ecological Appraisal Report
2	Breeding Bird Survey Report
3	Bat Roost Survey Report
4	Bat Activity Survey Report
5	Great Crested Newt Survey Report
6	Dormouse Survey Report
7	Confidential Annex – **MUST NOT BE RELEASED INTO THE PUBLIC DOMAIN**

Non-Technical Summary

Pleydell Smithyman Limited were instructed by Breedon Southern Limited to complete a suite of ecological surveys to inform an Ecological Impact Assessment (EcIA). This EcIA has been produced to inform the ecological chapter of the Environmental Statement in relation to proposals for a western extension to the existing Denbigh Quarry. The assessment also includes a revised restoration scheme for the existing quarry with the aim of maximising the opportunities for ecological enhancement. Following completion of mineral extraction, the site will be restored to higher ground levels than previously consented, through the importation and use of inert materials. This will provide improved connectivity between

woodlands to the west and east of the existing quarry. The restoration of the site will include priority habitat comprising calcareous grassland, lowland neutral grassland, coastal and floodplain grazing marsh and broad-leaved woodland as well as quarry benches and faces with natural regeneration. An ephemeral water feature will also be created and an existing waterbody re-profiled.

The surveys included the following completed in 2019:

- an extended Phase 1 habitat survey;
- breeding bird survey;
- bat activity survey;
- bat roost activity survey;
- great crested newt population survey;
- dormouse presence/absence survey; and
- badger survey.

Update Bat Surveys were also undertaken in 2021 which included:

- An extended Phase 1 habitat survey
- Update desk study
- Aerial survey of trees with scope for roosting bats

The Extended Phase I Habitat survey recorded the presence of a range of habitats including active quarry and faces, improved grassland, broad-leaved semi-natural woodland, broad-leaved plantation woodland, scattered scrub, ephemeral/short-perennial vegetation, a defunct native species-poor hedgerow, scattered trees, five buildings and two waterbodies. All habitats were considered to be of site importance with the exception of broad-leaved semi-natural woodland which was important at the local level and buildings which were of negligible importance.

The protected species surveys recorded the presence of 27 species of breeding birds, peregrine, a minimum of 8 species of foraging and commuting bat, two metapopulations of great crested newt, badger activity and three butterfly species. This included a range of

species that are protected by legislation and/or of conservation concern. Foraging bats were considered to be of important at the local, district or parish level; peregrine and great crested newt were considered to be of importance at the local level and badger, other mammals, breeding birds and invertebrates were considered to be of importance at the site level.

It is considered that the extraction of mineral and associated works proposed at the Site, with the implementation of appropriate mitigation measures, would have a significant negative impact on any statutory or non-statutory nature conservation sites.

In the absence of mitigation, significant negative impacts are anticipated on Crest Mawr Wood SSSI, Coed Park-Pierce CWS, deciduous woodland and unimproved grassland priority habitats, broad-leaved semi-natural woodland, foraging/commuting bats, great crested newt, breeding birds, peregrine and invertebrates.

A number of mitigation measures have been detailed in this assessment to ensure that all legally protected species recorded within the site are adequately protected throughout the duration of the works. Following the implementation of mitigation, no significant negative impacts are anticipated on any known protected species or habitats present within the site providing the restoration plan is delivered as specified. A Construction Environmental Management Plan (CEMP) will be produced to detail the specific measures required to protect the faunal species on site during the construction works. A landscape and ecological management plan will be produced to ensure the long-term benefits of the habitats to be created, which will provide ecological enhancements.
A number of additional ecological enhancements are proposed for the site to seek a net biodiversity gain and to provide long-term benefits to the site as a result of the proposed development.

1 Introduction

Baseline information

1.1 This Ecological Impact Assessment (EcIA) has been produced to provide ecological information to support the Environmental Statement (ES) and has been prepared by Pleydell Smithyman Limited to present the results of a number of surveys relating to land at Denbigh Quarry, Denbighshire. The existing quarry and the proposed western extension combined are hereafter referred to as 'the Site'. The initial surveys covered the Site, however the ecological impact assessment focussed on any areas of change (i.e. the proposed western extension) as the existing quarry will continue to work in the same manner. This EcIA relates to mineral extraction, quarrying works and restoration of the proposed western extension. An amendment to the current restoration scheme for the existing quarry will also be sought. The proposed works will include the following:

- Extraction of mineral from the proposed western extension; and
- Restoration of the Site to include the creation of calcareous and neutral grassland, broad-leaved woodland, an ephemeral waterbody, and inclusion of areas of natural regeneration on quarry faces.

1.2 For the purpose of this chapter, the Site corresponds to the boundaries shown by the proposed western extension and the existing quarry (edged red and blue respectively) presented in Drawing M18.155.D.014 Preliminary Ecological Appraisal.

1.3 The currently approved restoration for the existing site is to be amended to provide better connectivity with the wider area and to aim to provide net gains for biodiversity. The revised restoration will include additional areas of broad-leaved woodland planting and a water attenuation feature.

1.4 The scope of this assessment has been determined through the consideration of ecological features that may be affected by the possible direct and indirect impacts associated with the proposed quarry extension at the Site.

1.5 The scope of this EcIA, collection of baseline data, evaluation of ecological resources, description and assessment of the significance of impacts follows guidelines set out by

the Chartered Institute of Ecology and Environmental Management (CIEEM, 2019) and references therein, as well as BS42020: 2013 Biodiversity Code of Practice for Planning and Development.

1.6 This EcIA cross refers to a number of technical appendices that individually report the range of habitat and species specific surveys that have been undertaken as part of the assessment. The drawings referred to in this chapter are contained in the relevant appendices.

1.7 In accordance with the legislation relating to badgers (Protection of Badgers Act 1992), the information relating to badgers is reported in Technical Appendix 7 and is classed as confidential due to the risk of persecution of species.

Site Description

1.8 The site comprises an existing working quarry with bare earth, open water and cliff faces. The working quarry is surrounded by areas of plantation and semi-natural woodland with small areas of scattered scrub. The north-western boundary of the extension is bordered by Crest Mawr Wood Site of Special Scientific Interest (SSSI). The proposed extension comprises improved grassland, a defunct hedgerow and a belt of broad-leaved plantation woodland. A number of scattered trees are also present within the improved grassland field.

1.9 In the wider area, arable and pastoral land dominated the majority of the northern and western landscape, with the town of Denbigh present to the south and east. An industrial park is also present to the east.

1.10 Please refer to Chapter 2 of the Environmental Statement which provides a full description of the site.

Background Data

1.11 Previous survey data was collated and analysed in 2009 to inform a planning application to amend Condition 1 of planning permission 01/2009/1424 to extend the period for the completion of quarrying operations. The surveys completed at this time included a preliminary ecological assessment, bat roost surveys and bird surveys focussing on peregrine.

1.12 All ecological survey work to inform this planning application took place during 2019 with updates to certain aspects in 2021. A summary of the specific protected species surveys carried out on the Site are detailed in Table 1 below.

1.13 Full methodologies for the individual surveys can be found in the appropriate Technical Appendices.

Table1: Ecological Surveys undertaken

Survey Type	Dates Completed	Coverage of Presented Data	Technical Appendix
Extended Phase 1 Habitat	April 2019 Updated June 2021	The Site	1
Breeding Bird including peregrine	May – July 2019	The Site	2
Bat Roost Presence/Absence	July – August 2019 Updated Sept 2021*	The proposed extension only	3
Bat Activity Transect	May - September 2019	The Site	4
Great Crested Newt	May – June 2019	The proposed extension only	5
Dormouse Presence/Absence	May – November 2019	The proposed extension only	6
Badger	September 2019	The Site	7 (Confidential)

* This update took the form of an aerial at height survey deemed proportionate as no roosts were identified in 2019 and at height surveys allow for a greater detail of inspection of potential roost features. Furthermore, bat tree roosts often occur in very short time frames and survey timeframes remain subject to very limited timeframes, much less so than buildings.

2 Competence of Persons Undertaking Assessment

2.1 The ecological surveys were undertaken by a team of experienced and qualified ecologists from Pleydell Smithyman Limited and The Ecology Consultancy. The survey team was guided by Kelly Hopkins BSc, (Hons.) Zoology, ACIEEM, who has extensive field and technical experience in zoological and botanical surveys, and exceptional organisational skills with seven years' experience of writing, contributing to and compiling reports and EcIAs. Survey support was provided by The Ecology Consultancy with breeding bird surveys being led by Nick Lishman BSc (Hons) MSc and the dormouse surveys led by Rosie Marston BSc MSc MCIEEM. The team is particularly experienced in assessing mineral extraction projects and associated restoration. This EcIA was written by Kelly Hopkins and reviewed by an external independent consultant.

3 Limitations

3.1 There are not considered to be any limitations to the production of this EcIA. However, a number of survey limitations and constraints are detailed in the relevant species reports in the attached appendices. These have been taken into account in the assessment of ecological importance, the significance of impacts and presentation of appropriate mitigation measures.

4 Planning Policy and Legislation

4.1 The Conservation of Habitats and Species (Ammendment) (EU Exit) Regulations 2019 are the principal means by which Council Directive 92/43/EEC on the Conservation of Natural Habitats of Wild Fauna and Flora (the "Habitats Directive") is transposed in England and Wales and the adjacent territorial seas. They also transpose elements of the EU Wild Birds Directive in England and Wales.

4.2 England, Scotland, Northern Ireland and Wales have individual plans to protect and reverse the declines of more widespread species and habitats that (in Wales) are covered by Section 7 of the Environment (Wales) Act 2016. This Act lists species and habitats noted as species of principal important (SPI) and habitats of principal importance (HPI) respectively.

4.3 The details relating to the legislation for all protected species can be found in the Preliminary Ecological Appraisal Report in Technical Appendix 1. Certain species in the UK are protected under the Conservation of Habitats and Species Ammendment) (EU Exit) Regulations 2019, The Wildlife and Countryside Act 1981 (as amended) and the Protection of Badgers Act 1992. This legislation affords certain species protection against killing or injury of the individual animals as well as protection of habitats that provide breeding or resting places for certain species.

4.4 This assessment is guided by the Planning Policy for Wales (PPW), Edition 10 produced in December 2018, where the policies in section 6, taken as a whole, detail the importance of the distinctive and natural places in Wales. The chapter states that:

"A prosperous Wales can be realised by valuing the quality of our landscapes and historic environment as important for tourism, business, local employment, locally sourced

building products, in attracting inward investment and to be accessed used and enjoyed by local communities. By protecting and enhancing biodiversity and our natural environment more generally, it will be possible to future proof economic assets in response to the challenges presented by climate change, to promote low carbon and appropriate resource choices which address the causes of climate change and to provide cost effective ecosystem services such as clean air and water."

4.5 Paragraph 6.4 of PPW is of particular relevance and relates to biodiversity and ecological networks.

4.6 Denbighshire's Local Development Plan details the presence of Denbigh Quarry. The proposed extension is not allocated. It is accepted that extensions to existing quarries are less environmentally damaging than new quarries as existing structures can be utilised.

4.7 The application has been assessed for its need against Policy PSE17 of the adopted Denbighshire Local Development Plan.

5 Survey Methodology

Desk Study

5.1 In order to obtain information on sites of nature conservation interest in the area, the Multi-Agency Geographical Information for the Countryside (MAGIC) website was searched for ecological statutory designated sites within a 2km radius around the central point of the Site.

5.2 In addition, Cofnod (North Wales Environmental Information Service) was commissioned to undertake a data search for protected and notable species, sites of conservation importance and ancient woodland within a 2km radius of SJ049671 (the central grid reference for the Site). Relevant information is reproduced in Appendix 1.

5.3 The Natural Resources Wales (NRW) terrestrial Phase 1 habitat survey and habitat network information was also reviewed to identify priority habitats within 2km of the site.

5.4 Reference was also made to Ordnance Survey maps and aerial photography, which were used to determine the presence of open water and ponds in the area and to provide information on land use and habitat connectivity throughout the area. Pre-existing survey information for the Site was also reviewed to inform the assessment as detailed in paragraph 1.9 above.

Habitat Survey

5.5 The methods used for ecological survey are in accordance with those established and generally accepted methodologies for field survey, as published by the Chartered Institute of Ecology and Environmental Management (CIEEM), NRW, or relevant advisory group e.g. (Bat Conservation Trust).

5.6 In line with current best practice, an extended Phase 1 habitat survey comprises an assessment of the habitat structure of the Site as a whole and aims to identify and provide further information. The survey is a standardised method of recording habitat types and characteristic vegetation, as set out in the Handbook for Phase I Habitat Survey – a technique for Environmental Audit (JNCC, 2010). This survey method is extended through the additional recording of specific features indicating the presence,

or likely absence, of protected species or other species of nature conservation significance.

5.7 Further details of the extended Phase 1 habitat methodology are provided in Technical Appendix 1.

Impact Assessment Methodology

5.8 In line with current best practice, the following criteria are applied to assess the nature conservation importance of the 'important ecological features' (IEFs), i.e. the sites, habitats, ecosystems, species, populations, communities or assemblages (both on and off-site) that could be affected by the proposed development. An assessment of impacts on IEFs is required at specified geographical levels in accordance with CIEEM (2019) as follows: international and European; national; regional; metropolitan, county, vice-county or other local authority-wide area; and local.

5.9 When describing ecological impacts and effects, the following characteristics are referenced as required:

- Positive and negative;
- Extent;
- Magnitude;
- Duration;
- Frequency and timing; and
- Reversibility.

5.10 Following this, an assessment of the cumulative impact and effects and finally the residual impacts are discussed in line with CIEEM (2019).

5.11 An EIA scoping opinion (01/2019/0573) was provided by Denbighshire County Council in August 2019 which included comments from the county ecologist and NRW. Their comments have been reviewed and taken into consideration (where appropriate) within this Ecological Impact Assessment.

5.12 Additional liaison has occurred between Kelly Hopkins of Pleydell Smithyman Limited and Matthew Ellis of NRW in December 2019 in relation to great crested newt.

6 Baseline Conditions and Evaluation of Important Ecological Features

Ecologically Designated Sites

Statutory Nature Conservation Sites

6.1 The data search returned one statutory designated site present within the Site. This was Graig Quarry Site of Special Scientific Interest (SSSI) located towards the south-western boundary of the existing quarry. This was approximately 200m to the south of the proposed western extension. The site is 0.45 hectares in size and is notified for its rare higher plant species interest. Further details are provided in Technical Appendix 1.

6.2 One other statutory designated site was present within 2km of the site. This was Crest Mawr Wood SSSI located on the north-western boundary of the proposed western extension. This is 23 hectares in size and is notified for its botanical interest. Further details are provided in Technical Appendix 1.

Non-Statutory Nature Conservation Sites

6.3 Cofnod returned ten County Wildlife Sites (CWS) within 2km of the site. These are detailed in the below table:

Table 2. Non-statutory designated sites details

Site Title	Location	Site Description
Coed Parc-Pierce CWS	Adjacent to the eastern boundary	Broad-leaved limestone woodland
Denbigh Golf Course CWS (DR001)	550m to the north-west	Unimproved neutral grassland
Denbigh Golf Course CWS (D063)	680m to the north-west	Calcareous grassland and limestone outcrop
Coed Coppy CWS	680m to the west	Broad-leaved ancient woodland, neutral grassland and bracken.
Coed Mawr CWS	1.2km to the north-west	Broad-leaved woodland
King's Mill/Afon Ystrad Woods CWS (D065/A)	1.6km to the south-west	Ancient broad-leaved woodland
Pont Ystrad fields CWS	1.8km to the south	Ancient broad-leaved woodland

Rosa-fawr/Llys/Pont Ystrad Woods CWS	1.9km to the south	Neutral and calcareous grassland with rock outcrops
Bryn-y-Parc CWS	2km to the north-west	Neutral grassland and scrub

Ancient Woodland

6.4 There were a total of 30 areas of ancient woodland within 2km of the Site centre. These were a combination of ancient semi-natural woodland, restored ancient woodland sites and plantation on ancient woodland sites. An area of ancient semi-natural woodland and plantation on ancient woodland is present towards the south-western corner of the Site (to the south of the proposed western extension). A second area of ancient semi-natural woodland is present bordering the eastern boundary of the Site; with areas of ancient semi-natural woodland, plantation on ancient woodland and restored ancient woodland bordering the north-western boundary of the proposed western extension.

Priority Habitats

6.5 The Cofnod data search returned a number of habitats listed on the priority habitat inventory within a 10km radius from the central point of the site including coastal and floodplain grazing marsh, blanket bog, unimproved calcareous grassland, unimproved acid grassland and semi-natural broad-leaved woodland. These areas were not mapped and therefore it was not possible to calculate how close these habitats were to the site or provide an indication of their distribution.

6.6 The NRW habitat network information identified unimproved grassland and broad-leaved woodland priority habitat within 2km of the site. A total of 29 areas of broad-leaved woodland were present within 2km of the site boundary. The closest of these was located on the site and formed the boundaries of the existing quarry. The next closest was approximately 200m to the south-east of the site. A total of 15 areas of unimproved grassland were present within 2km of the site boundaries. The closest of these was approximately 150m to the south of the site.

6.7 Table 3 below provides a summary of statutory and non-statutory site designations relevant to the Site.

Table 3: Summary of Statutory and Non-Statutory Site Designations relevant to the Site

Level of Importance	SITE	AREA (ha)	REASON FOR DESIGNATION	PROXIMITY TO THE SITE
National	Graig Quarry SSSI	0.5	Botanical	On the Site, 200m to the south of the proposed western extension
National	Crest Mawr Wood SSSI	23	Botanical	Adjacent to the proposed western extension
County	Coed Parc-Pierce CWS	1.2	Botanical	Adjacent to the eastern boundary
County	Denbigh Golf Course CWS (DR001)	0.3	Botanical	550m to the north-west
County	Denbigh Golf Course CWS (D063)	1.3	Botanical	680m to the north-west
County	Coed Coppy CWS	12.6	Ancient Woodland and Botanical	680m to the west
County	Coed Mawr CWS	6.2	Botanical	1.2km to the north-west
County	King's Mill/Afon Ystrad Woods CWS (D065/A)	15.4	Ancient Woodland and Botanical	1.6km to the south-west
County	Pont Ystrad fields CWS	4.9	Botanical	1.8km to the south
County	Rosa-fawr/Llys/Pont Ystrad Woods CWS	1.1	Botanical	1.9km to the south
County	Bryn-y-Parc CWS	1.4	Botanical	2km to the north-west

Habitats

6.8 Details of habitats occurring across the Site including a habitat plan and full species lists are included in Technical Appendix 1.

Broad-leaved Semi-natural Woodland

6.9 This habitat was present in blocks of woodland to the north-east, north-west and south of the site with most included on the ancient woodland inventory. The canopy was dense with the recorded abundant species including pedunculate oak, ash and sycamore. The understorey comprised of frequent elder, hazel, hawthorn and willow and the ground flora was varied, with dense bramble in places and ancient woodland indicator species such as frequent bluebell, wood anemone and dog's mercury. The woodland did not appear to be managed, but was in good condition with a range of species present. Some mature trees present in the woodland are considered likely to be over 100 years old. This habitat is a priority habitat in Wales.

6.10 The broad-leaved semi-natural woodland has been assessed as important at the **local** level due to its valuable habitat but abundance in the wider area.

Broad-leaved Plantation Woodland

6.11 Areas of broad-leaved plantation woodland were present to the north, north-east and west of the active quarry. The trees in these areas appeared to have been regularly coppiced, forming dense woodland, particularly to the west. This habitat contained frequent hawthorn, blackthorn, hazel, field maple and willow with occasional spindle and guelder rose. The ground flora was varied with a variety of common and widespread species including common ivy and stinging nettle.

6.12 The broad-leaved plantation woodland has been assessed as important at the **site** level due to its abundance in the wider area.

Scattered Scrub

6.13 Scattered scrub was present around the boundaries of the quarry, with species present including frequent bramble, hawthorn and blackthorn and occasional ash saplings, rose, willow sp. and buddleia. Towards the northern boundary of the quarry this scrub was denser, with other areas around the quarry being much sparser.

6.14 The scattered scrub has been assessed as important at the **site** level due to the common and widespread nature of the species recorded and the habitat.

Scattered Trees

6.15 Mature scattered trees were present on improved grassland towards the westem boundary of the proposed western extension. Trees present included pedunculate oak, ash, sycamore, crab apple and hawthorn. A number of these trees had fungus present or obvious damage to the tree such as hollow trunks and broken limbs.

6.16 The scattered trees have been assessed as important at the **site** level due to the presence of common and widespread species and frequent scattered trees in the wider landscape.

Improved Grassland

6.17 The proposed western extension included three areas of improved grassland fields. One of these fields was grazed by cattle at the time of the survey. The other two fields were not grazed and were mown by tractor. The sward length of the fields was approximately 10cm at the time of the survey. The grassland was dominated by perennial rye-grass, with frequent and occasionally occurring common herbs. Harebell was rarely occurring along the edges of the field.

6.18 The improved grassland has been assessed as important at the **site** level due to the abundance of this habitat in the wider landscape.

Standing Water

6.19 There were two ponds present on the site. Pond 1 was present in the centre of the quarry and was a large lagoon used to extract water from for the bowser to reduce dust levels around the quarry. The pond had no aquatic vegetation noted at the time of the survey. Pond 2 was present towards the entrance of the quarry and was a previous silt lagoon that is no longer used except for site drainage via a connection under the road. The pond did not contain any aquatic vegetation. Bramble was present around the northern edge and scattered scrub including buddleia and willow sp. were present to the west. No standing water was present in the proposed western extension. Ponds are a priority habitat in Wales.

6.20 The standing water has been assessed as important at the **site** level due to the lack of vegetation present and abundance of this habitat in the wider landscape.

Quarry

6.21 The vast majority of the site comprised working quarry, which included benched cliff faces, ramps, open voids and bare ground. Scattered scrub and ephemeral/short perennial were present around the edges of the quarry where there had not been any mineral extraction or vehicle movement recently.

6.22 The quarry habitat has been assessed as important at the **site** level due to the lack of vegetation present and limited value for wildlife.

Ephemeral/Short Perennial

6.23 Small patches of ephemeral/short perennial habitat were noted around the edges and banks of the quarry. Species recorded included dandelion, colt's foot, ragwort, willowherb and pineappleweed.

6.24 The ephemeral/short perennial habitat has been assessed as important at the **site** level due to the presence of common and widespread species only.

Species-poor Defunct Hedgerow

6.25 There was one species-poor defunct hedgerow present towards the western boundary of the proposed western extension. This was approximately 1.5m in height and width and was dense along its extent with a number of gaps present. The hedgerow appeared to be regularly managed via flail. Species present included abundant hawthorn, frequent gorse and blackthorn and occasional field rose. Hedgerows are listed as priority habitats in Wales.

6.26 The species-poor defunct hedgerow has been assessed as important at the **site** level due to the presence of common and widespread species only. Hedgerows are listed as HPI, however the defunct and species-poor nature of this hedgerow present on the Site reduces its importance.

Buildings

6.27 There were a number of buildings associated with the weighbridge present towards the south-east of the site. These included the weighbridge, a sub-station and a steel container. A porta cabin toilet block and a brick shed were also present towards the entrance of the site. A number of buildings were also present associated with the concrete plant. These buildings were not inspected at the time of the survey as these

are owned by Hanson and will not be impacted by the proposed extension. No buildings were present in the proposed western extension.

6.28 The buildings have been assessed as of **negligible** importance due to the lack of potential for protected species.

Fauna

Bats

Roosting

6.29 There were four mature trees that were anticipated to be impacted by the proposals. Three of these were considered to offer moderate roosting potential for bats (Trees 2, 5 and 19), and one tree (Tree 1) was considered to offer high roosting potential. These trees offered a range of features including woodpecker holes, rot holes, a hollow trunk, a broken limb and a split limb (see Appendix 1). A further sixteen trees present within the proposed western extension and proposed to be removed were considered to offer low roosting potential.

6.30 There were also a number of mature trees within the woodland present to the south-west and north-west of the site that offered roosting potential for bats. These trees are not proposed to be removed or directly impacted by the proposals.

6.31 There were a number of buildings present within the site associated with the active quarry. These included the weighbridge, a sub-station, a steel container, a toilet block and brick shed. None of these buildings were considered to offer roosting potential for bats. A number of buildings were also present associated with the concrete plant. These buildings were not assessed at the time of the survey as these are owned by Hanson and will not be impacted by the proposed extension.

6.32 Bat roost surveys in 2019 and climbed surveys in 2021 were completed on the four trees that were anticipated to be impacted by the proposals. No roosting bats were observed during the surveys completed. Climbed tree inspections were conducted on the trees with low roosting potential that would be removed by the proposals. No evidence of bats was observed during these surveys.

6.33 Additional trees to the south-west of the proposed western extension were also climbed to identify any potential bat roosting features. One tree approximately 75m to the south-west of the proposed western extension was found to contain a likely bat roost.

6.34 Due to the lack of roosting bats recorded during the surveys, roosting bats are considered to be of **negligible** importance at the Site. Further details can be found in the technical report reproduced at Appendix 3.

Foraging and commuting

6.35 The Site, in line with Collins 2016, is considered to be of moderate habitat quality due to the connections of the hedgerows and woodland into the wider landscape. However, the majority of the features that provide connectivity to the wider area will be retained and not directly impacted by the proposed works, therefore it was considered appropriate to complete surveys in line with sites that offer low habitat quality due to the largely unsuitable habitat (comprising quarry and improved grassland) within the proposed western extension, with additional suitable areas of foraging habitat located in the wider area.

6.36 A suite of three bat activity surveys were conducted across the Site in 2019. In addition, a static bat detector was placed on the Site during 2019. During these surveys and including the results from the static bat detector and the bat roost surveys, a minimum of eight species of bat were recorded on the Site. Twelve species are known to be present within 10km of the Site. This included common pipistrelle, soprano pipistrelle, noctule, Leisler's, serotine, brown long-eared, lesser horseshoe and bats belonging to the genus *Myotis*. Of the recorded bat species, common pipistrelle was the most frequently encountered.

6.37 Single bats were encountered the majority of the time during the surveys and the overall levels of activity of these bats were most often considered occasional (2-3 passes).

6.38 Common pipistrelle, soprano pipistrelle, noctule, brown long-eared and lesser horseshoe bats were recorded within the proposed western extension.

6.39 Recorded bat activity, particularly for common pipistrelle bat was from close to sunset and sunrise suggesting that a bat roost(s) for common pipistrelle was likely present in

close proximity to the static detector location. It is possible that this could have been from woodland present on the Site, but not impacted by the proposals.

6.40 Hotspots of bat activity occurred around the eastern boundary of the proposed western extension and towards the northern, south-western and south-eastern boundaries of the site. Frequent activity was recorded along the road adjacent to the entrance to the quarry.

6.41 Cofnod returned records of unknown bat species (*Chiroptera*), Pipistrelle bat species, Myotis bat and brown long-eared bat within 2km of the central point of the site. None of these records were specific to the site, with the closest being a brown long-eared bat from approximately 450m to the south. This record was from 1986.

6.42 The assemblage of bats at the Site does not qualify for selection following the guidelines for the selection of local sites in Wales due to the lack of roosting bats. Common pipistrelle, soprano pipistrelle, noctule, brown long-eared and lesser horseshoe bats are listed as species of principal importance on Section 7 of the Environment (Wales) Act 2016.

6.43 The assemblage was initially assessed to be of regional importance in accordance with the guidelines from Wray, 2010. This is due to the presence of noctule which are classified as being within the 'rarest' category in Wales. It is considered that this assessment should be downgraded to the 'rarer' category given the distribution of this species across the majority of Wales. It is, therefore, considered that the ecological value of the bat assemblage present within the proposed western extension is of **local, district or parish** importance.

6.44 Further details can be found in Appendix 4.

Otter

6.45 There were two ponds present on the site, however these did not provide cover for otters; were unlikely to contain fish; and were not connected to suitable habitat in the wider landscape; and therefore were considered highly unlikely to support otter.

6.46 The closest river was the Afon Ystrad located approximately 1.5km to the south-west of the site.

6.47 Due to the lack of suitable habitat present on the Site, lack of desk study records provided by Cofnod, and the poor connectivity to the wider area, the Site is considered to be of **negligible** importance for this species and is not considered further.

Hazel Dormouse

6.48 The site contained suitable habitat for hazel dormouse in the form of hedgerows and broad-leaved woodland. The woodland in the northern and southern parts of the site had a diverse structure with a dense canopy and a varied understorey of coppiced hazel and elder with a ground flora that also contained suitable plants for foraging including bramble. The plantation woodland between the two mature woodlands had a good understorey of coppiced trees and there was good connectivity to the wider area into other suitable woodlands outside of the site boundary. The hedgerow in the north-western part of the site is defunct but dense with hawthorn and gorse present. This hedgerow connects to a dense area of woodland to the north and to an additional hedgerow that leads further south-west. This hedgerow and a section of the plantation woodland are present within the proposed western extension.

6.49 Cofnod did not return any records of hazel dormouse from the data search. However recent records (from 2017) are known to occur from a woodland approximately 1.6km to the south of the site.

6.50 Surveys were completed between May and November 2019, however no dormice or evidence of dormouse presence was recorded.

6.51 Due to the lack of evidence of dormouse following the surveys, dormouse are considered to be of **negligible** importance at the site and this species it is not considered further.

6.52 Further details can be found in Appendix 6.

Great crested newt

6.53 Two waterbodies occurred on the Site (within the existing quarry) and an additional three waterbodies were present within 500m of the Site. Of these 5 waterbodies, one offered good suitability (Pond 3); one average suitability (Pond 4); and three offered below average suitability for great crested newt (Pond 1, 2 and 5). One of these ponds (Pond 3) has historic records of great crested newt presence.

6.54 The Site contained suitable terrestrial habitat for this species in the form of hedgerows, scrub and woodland. The improved grassland and bare quarry are largely unsuitable for great crested newt due to the frequent disturbance and lack of shelter. The proposed western extension contained suitable habitat in the form of broad-leaved plantation woodland and a defunct hedgerow.

6.55 Environmental DNA (eDNA) surveys were completed on ponds 1 to 4. Positive results were returned for Ponds 2, 3 and 4. Pond 5 was not subject to further survey as it was further than 500m from the proposed western extension and areas of change.

6.56 Population surveys were completed on the ponds that had positive eDNA results and all three ponds were found to contain small populations of great crested newt. All three are considered to be breeding ponds due to the presence of juveniles or male and female adults. It is considered that two metapopulations are present.

6.57 Further details can be found within Appendix 5.

6.58 Due to the presence of small populations of great crested newt within close proximity to the Site, the Site is considered to be of **local** importance for great crested newt. Great crested newt is listed as a species of principal importance on Section 7 of the Environment (Wales) Act 2016.

Badger

6.59 Please refer to Technical Appendix 7 for the detailed report. The Site offered suitable habitat for sett building in the form of scrub and woodland and offered suitable habitat for foraging and commuting badgers in the form of hedgerows, woodland and improved grassland. The Site is considered to be of importance at the **site** scale for badger.

Water vole

6.60 There were two ponds present on the site, however these did not provide cover for water vole or suitable banks for burrowing; and were not connected to more suitable habitat and therefore were considered highly unlikely to support water vole.

6.61 Cofnod did not return any records of water vole from the data search.

6.62 Due to the lack of suitable habitat present, the Site is considered to be of **negligible** importance for this species and is not considered further.

Reptiles

6.63 The Site offered small areas of suitable habitat for reptiles in the form of the scattered scrub and grassland that bordered the woodland edges that could be used to forage, bask and disperse. The onsite woodland had a dense canopy with limited light reaching the ground, restricting ground flora and is therefore considered to be sub-optimal for reptiles.

6.64 The proposed western extension largely comprised unsuitable habitat for reptiles due to the presence of improved grassland. The border of the plantation woodland with the quarry offers small areas of suitable habitat for common reptile species, however these are not well connected to other more suitable areas of habitat in the wider area.

6.65 Cofnod returned five records of reptiles from the data search. These were all slow-worm and were located at least 760m to the south of the site, on the southern side of the town of Denbigh. The site is not well connected to these records and slow-worm are not considered likely to disperse long distances.

6.66 Due to the lack of large areas of suitable habitat for reptile, the lack of connectivity to other more suitable areas and the lack of reptile records in connection with the proposed extension, the proposed extension is considered to be of **negligible** importance for reptiles and is not considered further.

Other Mammals

6.67 No signs of any other protected, rare or notable mammal species were recorded. However, evidence of rabbit (non-native) was observed on the Site.

6.68 The data search returned from Cofnod returned records of brown hare and hedgehog from the 2km search radius surrounding the central point of the site. It is, therefore, possible that both of these species (which are species listed on Section 7 of the Environment (Wales) Act 2016) could occur on the proposed western extension.

6.69 Due to the potential for the Site to support small numbers of species, and the presence of suitable alternative habitat in the wider area the Site is considered to be of importance at the **site** level only for a range of other mammal species.

Birds

6.70 The Site offered suitable habitat for nesting and foraging birds in the form of woodland, hedgerows, scattered trees, scrub, cliff faces and waterbodies. The proposed extension contained small areas of suitable habitat including a hedgerow, scattered trees and plantation woodland.

6.71 Cofnod returned a large number of bird records from the 2km search radius surrounding the centre of the site. This included a number of records with a four figure grid reference that could include the site (SJ0466, SJ0467, SJ0567)

6.72 The breeding bird surveys completed recorded a total of 29 birds using the Site, of which 27 were recorded as confirmed, probable or possible breeding species. The breeding bird species recorded included many common and widespread opportunistic species and eight notable species. The habitats present on the Site used by these species are generally common and widespread in the wider area. Further details can be found within Appendix 2.

6.73 The breeding bird assemblage is considered to be of importance at the **site** level for breeding birds due to the lack of breeding bird assemblages that qualify for the assessment as a Local Wildlife Site.

Peregrine

6.74 The existing quarry offered suitable habitat for peregrine in the form of rock faces. The PWE includes the western extent of the existing quarry which supports suitable nesting habitat for peregrine. It has been reported that peregrine have previously nested in the quarry faces (Chris Bryan pers. Comm., 2019).

6.75 The breeding bird surveys completed in 2019 recorded peregrine calling in the woodland to the east of the quarry on the 2nd and 4th survey and a likely peregrine observed in the same location on the 1st survey. On two surveys a bird was spotted in the same tree, which may be a favoured plucking post, and indicative of territoriality and breeding close by, potentially with the eastern quarry face of the existing site. Peregrine was recorded as probably breeding on the site.

6.76 Cofnod returned three peregrine records from the 2km search radius surrounding the centre of the site. This included one record from 2015 which was specific to the site.

6.77 The Site, including the active quarry, is considered to be of importance at the Local scale for Peregrine. This importance would be increased to District scale where peregrine breeding is confirmed fur to he low number of records of this species in Denbighshire.

Invertebrates

6.78 The proposed western extension does not contained improved grassland, woodland, scattered trees and a hedgerow, of which all of these habitats are common in the wider area. It is therefore anticipated that a number of invertebrates are likely to occur on the proposed western extension (PWE), as well as in the wider area and the PWE is unlikely to support important populations of invertebrates that are not frequent elsewhere in the local area. During the PEA survey three species of butterfly were seen on the Site, none of which were considered to be rare or notable in the county.

6.79 Cofnod returned a number of records of butterfly and moth from the data search. None of these records were specific to the site; however these species could occur on the site.

6.80 Due to the lack of rare habitats present on the PWE and the likelihood of rare or notable invertebrates occurring being low, the ecological importance for invertebrates has been assessed as **site** level in context of the proposed development.

Ecological Processes and Future Baseline

6.81 The majority of the proposed western extension is comprised of improved grassland and is unlikely to significantly change over time due to the ongoing active management of the local landowners. Minor successional changes to the habitats bordering the quarry may occur, with scrub developing into woodland.

Summary of Important Ecological Features

6.82 The following designated sites, habitats and features of ecological significance have been identified in Table 4 through baseline studies as having the potential to be affected by the development proposals or requiring further evaluation and/or comment. Features that have been scoped out have also been detailed below.

Table 4: Summary of ecological features in the context of the Site

Feature	Conservation Importance	Status at the Site	Important Ecological Feature Importance in relation to the Site
Statutory Designated Sites			
Graig Quarry SSSI	National	On the Site, 200m to the south of the proposed western extension	National
Crest Mawr Wood SSSI	National	Adjacent to the proposed western extension	National
Ancient Woodland	National	Closest areas are present on the Site and adjacent to the proposed western extension	National
Broad-leaved woodland Priority Habitat	National	Closest areas are present on the Site	National
Unimproved grassland Priority Habitat	National	Closest area was 150m to the south of the site.	National
Non Statutory Designated Sites			
Coed Parc-Pierce CWS	County	Adjacent to the eastern boundary of the Site	County
Denbigh Golf Course CWS (DR001)	County	550m to the north-west	County
Denbigh Golf Course CWS (D063)	County	680m to the north-west	County
Coed Coppy CWS	County	680m to the west	County
Coed Mawr CWS	County	1.2km to the north-west	County
King's Mill/Afon Ystrad Woods CWS (D065/A)	County	1.6km to the south-west	County
Pont Ystrad fields CWS	County	1.8km to the south	County

Feature	Conservation Importance	Status at the Site	Important Ecological Feature Importance in relation to the Site
Rosa-fawr/Llys/Pont Ystrad Woods CWS	County	1.9km to the south	County
Bryn-y-Parc CWS	County	2km to the north-west	County
Habitats and Flora			
Broad-leaved semi-natural woodland	National	Present to the north-east, north-west and south of the Site. Not present in the proposed western extension.	Local
Broad-leaved plantation woodland	Site	Present to the north, north-east and west of the active quarry and present on the eastern boundary of the proposed western extension.	Site
Scattered Scrub	Site	Present around the boundaries of the quarry and along the eastern boundary of the proposed western extension.	Site
Scattered Trees	Site	18 scattered mature trees towards the western boundary of the proposed western extension.	Site
Improved Grassland	Site	Present over the majority of the proposed western extension	Site
Standing Water	National	Two ponds present within the quarry	Site

Feature	Conservation Importance	Status at the Site	Important Ecological Feature Importance in relation to the Site
Quarry	Site	Present throughout the majority of the Site	Site
Ephemeral/short perennial	Site	Present around the edges and banks of the quarry.	Site
Species-poor defunct hedgerow	National	One defunct hedgerow present towards the western boundary of the proposed western extension.	Site
Buildings	Site	5 buildings present towards the entrance of the quarry and additional buildings present on the concrete plant.	Negligible - not considered further in this assessment
Fauna			
Roosting Bats	International	No roosting bats recorded during the survey.	Negligible - not considered further in this assessment
Foraging and Commuting Bats	International	8 species of foraging and commuting bats using the Site.	Local, District or Parish
Otter	International	No suitable habitat.	Negligible - not considered further in this assessment
Hazel dormouse	International	Species not recorded.	Negligible - not considered further in this assessment
Great crested newt	International	Small populations of great crested newt recorded in 3 ponds within 500m of the proposed western	Local

Feature	Conservation Importance	Status at the Site	Important Ecological Feature Importance in relation to the Site
		extension comprising two meta-populations.	
Badger	National	Confidential information.	Site
Water vole	National	No suitable habitat.	Negligible - not considered further in this assessment
Reptiles	National	Small areas of suitable habitat, with limited connectivity to other suitable habitat No local records returned with connectivity to the site.	Negligible - not considered further in this assessment
Other Mammals	National	Evidence of non-native pests (rabbit). Local records of species of principal importance including brown hare and hedgehog. Suitable habitat present.	Site
Breeding Birds	National	27 species recorded as confirmed, probable or possible breeding species including species listed on the Red and Amber list; species of principal importance and Schedule 1 listed.	Site

Feature	Conservation Importance	Status at the Site	Important Ecological Feature Importance in relation to the Site
Peregrine	National	Peak count of 2 individuals. Probable breeders on the site. Previous reports of breeding at the quarry. Previous records specific to the quarry.	Local
Invertebrates	Site	3 butterfly species recorded on the Site. Common and widespread invertebrates likely.	Site

7 Potential Effects (Impact Assessment)

7.1 This chapter describes the potential effects of the proposed quarry extension on the IEFs recorded on the Site and are characterised in terms of their direction, permanence, certainty and reversibility in line with CIEEM (2019) guidelines. An assessment is made of the likely significance of the impact prior to any mitigation or compensation measures.

7.2 The predicted impacts do not take into account embedded mitigation or design as this is incorporated into the scheme. The embedded mitigation of the scheme includes the creation of soil bunds surrounding the northern and southern boundaries of the proposed extension and the planting of trees along the southern boundary of the proposed extension in the first available planting season following the grant of planning permission.

7.3 The current working practices that are adopted for the existing quarry will be continued through to the proposed western extension. Good construction site management regarding ecological issues will be implemented to avoid/minimise generation of litter, dust, noise and vibration. This will be controlled and monitored throughout the life of the development. These measures will be detailed in a Landscape and Ecological Management Plan (LEMP) in accordance with BS42020:2013.

Work Proposals

7.4 The proposals will involve the removal of habitat to allow the stripping of soils in advance of the extraction of mineral. Blasting of the western faces of the existing quarry will occur to extract the mineral from the proposed western extension. Access will continue to be via the existing quarry entrance and all material will continue to be processed using the current processing plant. The extraction limit has been designed to ensure suitable stand-offs from all boundaries, including a 30m buffer zone from the Crest Mawr Wood SSSI to the north-west of the Site. The works will occur through a series of five phases. Soil bunds will be created around the external boundaries of the extraction area to reduce the scope for impacts from potential visual, dust, light and noise emissions. These bunds will be between 2 and 3m in height dependent upon the location of nearby

receptors. The anticipated life span of the proposed extension is approximately 27 years from commencement of mineral extraction to restoration.

7.5 The existing quarry will be restored progressively with the northern section of the existing quarry restored first, and then the more southern areas will be restored following the completion of mineral extraction of the proposed western extension. The restoration of the existing quarry will include the creation of broad-leaved woodland and calcareous and neutral grassland that are intended to qualify as priority habitats. Quarry benches will be retained, and vegetation will be allowed to naturally regenerate in these areas. The pond towards the entrance of the quarry (Pond 2) will be re-profiled to form a more natural waterbody. The buildings used on site will be removed. The revised restoration for the existing quarry will provide additional suitable habitat through the creation of broad-leaved woodland and the retention of the waterbody at the entrance of the site.

Potential Construction and Operational Impacts

7.6 The following development-related impacts as a result of the PWE have been identified and are discussed in the following sections:

- Direct impact - Habitat loss;
- Indirect impact – Noise disturbance;
- Indirect impact - dust deposition; and
- Indirect impact - Hydrological changes.

Direct Habitat Loss

7.7 Habitat removal would occur at the start of Phases 1, 2 and 3. All habitat within the PWE would be removed including an area of broad-leaved plantation woodland, improved grassland, standard trees, scattered scrub and a defunct hedgerow. The western faces of the existing quarry would also be removed and new faces would be created. All of these habitats are considered to be of site importance only.

Noise Disturbance and Dust Deposition

7.8 The increased level of noise and dust created as part of the proposals may impact upon several species and species groups including birds, bats, badgers and invertebrates.

7.9 In the absence of mitigation, dust particles may travel into the wider landscape, which over time, may cause a deterioration in the quality of surrounding habitats. The air quality section of the environmental statement (refer to section 8.5.18 of the ES) states that adverse dust impacts are uncommon beyond 400m from hard rock quarries. This chapter also states that receptors within this distance are upwind of the prevailing wind direction where potentially dusty winds are infrequent.

7.10 The increased level of noise/vibration is likely to impact upon invertebrates, mammals and birds and may cause disturbance that could affect their ability to survive and breed. This may then cause certain species to move away from these sites and not return until noise levels have decreased. However these proposals are for an extension to an existing site, and as such a level of disturbance already forms part of the baseline setting at this time.

7.11 There is no proposed change to the existing lighting used on the site. No additional lighting will be installed within the proposed extension.

Hydrological Changes

7.12 The extraction of mineral from the Site, in the absence of mitigation, may have negative impacts on local habitats. The excavation areas will be de-watered in the later phases (3 to 5) to allow the extraction of mineral and this in turn may result in a reduction in ground water level and a draw-down effect on local receptors. Any water that is discharged into surrounding water courses will be subject to an Environmental Permit and would have to be screened prior to release into external watercourses. Please refer to Chapter 9 of the Environmental Statement for full details. The hydrological and hydrogeological impact assessment states: "*there are no groundwater dependent ecological sites within the expected maximum R_o of dewatering. Ecological sites that do fall within the radius, such as Crest Mawr Wood SSSI, Graig Quarry SSSI and Coed Parc-Pierce Local Wildlife Site are not considered groundwater dependent and are*

underlain by significant unsaturated thicknesses. Significant associated impacts on these features are not anticipated."

Impacts on Important Ecological Features

Statutory Designated Sites

7.13 Graig Quarry SSSI is present approximately 200m to the south of the proposed westem extension. The SSSI is separated from the proposed works by areas of broad-leaved semi-natural and plantation woodland, which are considered to provide an adequate screening buffer from any changes to dust, noise and lighting levels that may result from the proposed extension. Due to the lack of groundwater dependent habitats, there are considered to be **negligible** impacts on the Graig Quarry SSSI and this site is not considered further.

7.14 Crest Mawr Wood SSSI is present adjacent to the north-western boundary of the proposed western extension. A minimum stand-off of 30m will be observed from the outer toe of the screening bund and the SSSI boundary; however the SSSI may be subject to indirect impacts from changes to noise and dust. Crest Mawr Wood is 23 hectares in size, and approximately 60% of the SSSI falls within 400m of the PWE. It is unlikely that noise and dust impacts would impact 60% of the SSSI, as the closest boundary trees and habitats are most likely to be impacted. In the absence of mitigation, Crest Mawr Wood SSSI may incur medium-term, temporary, reversible **negative impacts** significant at the site level.

Non-Statutory Designated Sites

7.15 One non-statutory designated site was present adjacent to the eastern boundary of the existing quarry – Coed Parc-Pierce CWS. This site therefore may be subject to impacts from changes to noise and dust. The hydrological report states that this site does not support any groundwater dependent habitats and therefore will not be subject to any significant impacts as a result in any changes to hydrology. Slight adverse effects in relation to changes to noise and dust may occur. This CWS is approximately 12 hectares, and situated 270m to the east of the PWE. Approximately 25% of the CWS would fall within 400m of the PWE and therefore may be impacted by the proposals. It is considered unlikely that any of the habitats further than 50m from the edge of the quarry would be

impacted by dust deposition. In the absence of mitigation, Coed Park-Pierce CWS may incur medium-term, temporary, reversible **negative impacts** significant at the site level.

Ancient Woodland

7.16 There were two areas of ancient woodland within 500m of the Site. These may be subject to impacts from changes to noise and dust. No hydrological impacts are anticipated on these ancient woodlands. The presence of soil bunds between the proposed extension and these ancient woodlands is considered appropriate to mitigate against any impacts from dust and noise and therefore as this is embedded mitigation as part of the scheme, there are considered to be **negligible** impacts on ancient woodland within proximity to the site.

Priority Habitats – deciduous woodland

7.17 There were areas of deciduous woodland present on the Site forming the boundaries with the existing quarry. Due to the proximity to the proposed extension, these habitats may be subject to impacts from changes to noise and dust. These habitats are not considered to be groundwater dependent and, therefore, will not be subject to any impacts from hydrological changes. Negative effects in relation to dust are possible due to the proximity of the site to these habitats. None of this priority habitat would be subject to any direct habitat removal as a result of the development. In the absence of mitigation, the deciduous woodland in close proximity to the Site, may incur medium-term, temporary, reversible, **negative impacts** significant at the site level.

Priority Habitats – unimproved grassland

7.18 There was an area of unimproved grassland approximately 150m from the Site. Due to the proximity to the proposed development, this habitat may be subject to impacts from changes to noise and dust. These habitats are not considered to be groundwater dependent and therefore will not be subject to any impacts from hydrological changes. Negative effects in relation to dust are possible due to the proximity of the site to these habitats. None of this priority habitat would be subject to any direct habitat removal as a result of the development. In the absence of mitigation, the unimproved grassland, in close proximity to the Site, may incur medium-term, temporary, reversible **negative impacts** significant at the site level.

Impacts on Habitats

Habitats of Local Importance

Broad-leaved semi-natural woodland

7.19 This habitat occurred on the Site surrounding the existing quarry, present to the south-east and north-east of the proposed extension. The proposals will not involve the removal of any of this habitat, however it may be subject to indirect impacts from noise and dust. There are not anticipated to be any negative hydrological impacts as this habitat is not groundwater dependent. In the absence of mitigation, this habitat may be subject to a **medium-term negative impact** that is considered to be **temporary, reversible and significant at the site level.**

Habitats of Site Importance

7.20 Habitats of site importance include broad-leaved plantation woodland, scattered scrub, scattered trees, improved grassland, standing water, quarry, ephemeral/short perennial and species-poor defunct hedgerow. Areas of all of these habitats will be removed to allow for mineral extraction and restoration. Pond 1 will be removed as part of the restoration and will be restored to priority habitat calcareous grassland, Pond 2 will be retained but will be re-profiled to form a more natural waterbody. All other habitat will be removed to allow the mineral extraction to take place. Additional indirect impacts are not anticipated on these habitats that occur on the Site. The development would have a **short-term, negative impact** on these habitats that is considered to be **temporary, reversible and non-significant.**

Fauna

Bats – foraging/commuting

7.21 The removal of the hedgerow, scattered trees, and broad-leaved plantation woodland on the Site would reduce the available habitat for foraging and commuting bats. Disturbance is likely to impact bats from increased noise and dust. Increased dust levels could cause habitats to be stunted in growth, which in turn may reduce the invertebrate assemblage present and therefore reduce the prey availability for bats. In the absence of mitigation, it is considered that the proposed development would have a **long-term**

negative impact on foraging/commuting bats that is considered to be **temporary, reversible and significant** at the site level.

Great crested newt

7.22 Small populations of great crested newt forming two metapopulations have been recorded in 3 ponds within 500m of the Site during the 2019 surveys. The Site is considered to be of importance at the local level for great crested newt. Habitat that could be used by great crested newts in their terrestrial phase is to be removed to allow the proposed extension to commence, however this habitat is more than 250m from any breeding great crested newt ponds. Vehicle movements could also kill/injure animals that may occur on the Site. The proposed revised restoration of the Site would involve the re-design of Pond 2 at the entrance of the quarry to create a more natural waterbody, this could cause disturbance to great crested newts. The currently approved restoration of the site involves the removal of this pond which would result in a negative impact. In the absence of mitigation, it is considered that the development would have a **long-term negative impact** on great crested newt that is considered to be **temporary, reversible and significant at the site level.**

Badger

7.23 The proposals involve the removal of improved grassland and a hedgerow which would cause a minor reduction in foraging habitat for this species. It is considered that the development would have a **long-term negative impact** on badgers that is considered to be **temporary, reversible and non-significant at the site level.**

Other Mammals

7.24 Rabbit have been recorded on the Site and local records of priority species including brown hare and hedgehog have been returned, with suitable habitat present on the Site. The proposals will involve the removal of habitat that could support these species, including woodland, hedgerow and improved grassland. The destruction of habitat could cause a decline in numbers of these animals. The development will also increase levels of disturbance for these groups of animals from the increased noise and dust levels. It is considered that the proposed development would have a **long-term negative impact** for

other mammal species that is considered to be **temporary, reversible and non-significant.**

Breeding Birds

7.25 The development will involve the removal of areas of suitable habitat for breeding birds including hedgerow, scattered trees, and broad-leaved plantation woodland. Quarry faces will also be removed as the site is extended and restored. The loss of this habitat could result in the killing/injury of birds as well as the possibility of birds being displaced into other areas in the vicinity which may already be at carrying capacity. In addition, the extraction of mineral and increased vehicle and human presence within the Site may cause disturbance to birds in the form of noise and dust. This disturbance may cause birds to abandon their nests or to reduce their likelihood of breeding within areas of the Site that are not subject to mineral extraction.

7.26 In the absence of mitigation, it is considered that the proposed development would have a **long-term negative impact** on breeding birds that is considered to be **temporary, reversible and significant at the site level.**

Peregrine

7.27 The development will involve the removal of the western quarry faces, which will remove habitat for nesting jackdaws. This could cause them to move to the eastem quarry faces, where there is some evidence of peregrine nesting. This could cause a reduction in peregrine nest sites, or cause disturbance to or displacement of breeding peregrine.

7.28 In the absence of mitigation, it is considered that the proposed development would have a **long-term negative impact** on peregrine that is considered **temporary, reversible and significant at the local level.**

Invertebrates

7.29 Three butterfly species were recorded on the Site during the extended Phase 1 habitat survey although surveys for this group were not undertaken. The removal of areas of grassland, woodland, hedgerow and scrub will reduce the extent of habitat available to invertebrates. The increased level of dust created by the proposals may cause a

reduction in the quality and quantity of habitat available to invertebrates and may reduce the amount of food plants available. It is considered that the development would have a **long-term negative impact** on invertebrates that is considered to be **temporary, reversible and significant at the site level.**

Summary of Likely Significant Effects without Mitigation

7.30 In the absence of mitigation, the following significant impacts on important ecological features are predicted to occur, as shown in Table 5.

Table 5. Summary of likely significant impacts without mitigation

Important Ecological Feature	**Impact in the absence of Mitigation**
Crest Mawr Wood SSSI	Medium-term negative, temporary, reversible and significant impact at the site level
Coed Park-Pierce CWS	Medium-term negative, temporary, reversible and significant impact at the site level
Priority habitats – deciduous woodland	Medium-term negative, temporary, reversible and significant impact at the site level
Priority habitat – unimproved grassland	Medium-term negative, temporary, reversible and significant impact at the site level
Broad-leaved semi-natural woodland	Medium-term negative, temporary, reversible and significant impact at the site level
Foraging/commuting bats	Long-term negative, temporary, reversible, significant impact at the site level

Great crested newts	Long-term negative, temporary, reversible, significant impact at the site level
Breeding Birds	Long-term negative, temporary, reversible, significant impact at the site level
Peregrine	Long-term negative, temporary, reversible, significant impact at the local level
Invertebrates	Long-term negative, temporary, reversible, significant impact at the site level

8 Mitigation

8.1 This section of the EcIA considers the range of mitigation measures which are deemed to be required in order to avoid, reduce or (as a last resort) compensate for identified impacts on important ecological features. Following this an assessment of residual ecological effects is made in respect of habitats and species and compensation measures provided. Finally, measures deemed to represent ecological enhancements are then considered.

8.2 The degree of confidence in the likely success of mitigation, based upon published studies and the experience of the assessor, is also made and any uncertainties are clearly expressed.

8.3 The relevant legislation in respect of protected species is included within the relevant survey reports enclosed as Technical Appendices to this EcIA.

8.4 This section outlines the mitigation measures that would be incorporated into the proposed scheme. Recommendations for mitigation are based upon what is practicable and 'reasonable' and would not affect the integrity of the proposed development.

8.5 Mitigation on the Site is based on the underlying substrate, local features of ecological interest and local recommendations for restoration of habitats that are locally important.

8.6 The restoration of the Site includes the creation of priority habitat calcareous and neutral grassland, with blocks of broad-leaved woodland and quarry benches allowed to naturally regenerate. An ephemeral water feature would also be created at the low point of the proposed extension. This will be seasonally wet dependent on groundwater.

8.7 A 30m stand-off from the ancient woodland along the north-western boundary of the Site will be observed. A fence will be erected along the edge of this buffer to avoid any encroachment into this buffer area by vehicles or materials. The extraction and restoration works will be undertaken in phases to ensure the minimum amount of damage to ecological systems and to allow for the quickest possible establishment of restored areas.

8.8 The retention of external boundary features will ensure connectivity to the wider landscape is maintained throughout the life of the development.

8.9 Soil bunds will be created around the northern and southern boundaries of the proposed extension to reduce the scope for impacts from potential visual, dust and noise emissions. These bunds will be between 2 and 3m in height dependent upon the location of nearby receptors.

8.10 The good practice dust control and mitigation measures implemented at the existing quarry will continue and will extend to activities associated with the proposed extension. Please refer to the Air Quality Chapter of the Environmental Statement for further details.

8.11 Measures will be put in place to minimise hydrological impacts. This will include the creation of a quarry sump, not allowing the maximum working depth to proceed below minimum groundwater elevations, discharges to be completed under Environmental Permits, the production and implementation of a Hydrometric Monitoring Scheme (HMS) with periodic data review, the implementation of recommendations following the reviews, containment/removal of spillages, temporary cessation of dewatering discharge and removal of flood waters under temporary supplemental discharge arrangements where appropriate. For full details please refer to the Hydrological Chapter (Chapter 9) of the Environmental Statement.

8.12 A tool-box talk will be provided to Contractor staff as part of their site induction by a suitably qualified ecologist regarding ecological sensitivities and to outline which protected species are present within the proposed construction area prior to the contractors starting work on the Site.

8.13 All trees to be retained in close proximity to the proposed development are to be surrounded by tree protection fencing as detailed within the tree survey report. A construction exclusion zone will also be created to the south of the proposed extension to ensure that the trees in this location remain unaffected by the works.

8.14 The removal of the trees on the site shall be conducted by an arboriculturalist using soft felling techniques. This will involve carefully felling the trees in sections and then

lowering each section to the ground. The felled tree sections should be left on the ground for a period of 24 hours before being removed to ensure that any animals that may have been present have the opportunity to vacate the tree.

8.15 Prior to the removal of the buildings present within the existing quarry to allow the restoration of these areas, an update preliminary roost assessment will be completed on these buildings to re-assess their potential for roosting bats. Should potential roosting features be identified at this time, bat roost surveys will be required. No building demolition work can be completed until all recommended bat roost surveys have been completed and appropriate measures have been put in place to safeguard any roosting bats that may be present at that time.

Protected Species

Foraging/Commuting Bats

8.16 All trees that are to be retained will have a minimum buffer zone in line with the recommendations within the tree survey report (see Appendix to Landscape and Visual Impact Assessment). This will be marked by tree protection fencing. This will ensure that these trees remain unaffected by the proposed development and that any bats using these trees for foraging purposes remain undisturbed. A 30m stand-off will be observed from Crest Mawr Wood SSSI along the north-western boundary of the Site. For full details regarding appropriate stand-offs from features around the external boundaries of the Site please refer to the arboricultural report (Appendix 5 of Planning Statement).

8.17 The restoration scheme will provide a variety of foraging and commuting habitats for bats in the form of woodland, grassland and standing water. The planting of trees will provide future potential for roosting bats.

8.18 No residual effects are anticipated with regards to foraging and commuting bats.

Great Crested Newt

8.19 A protocol of following a non-licensed method statement will be undertaken for the works required at the PWE. This will include details such as toolbox talks, supervised removal of hedgerows and woodland and phased clearance of the woodland. This has been discussed with a senior species advisor at NRW who is satisfied with this approach.

8.20 Should any great crested newts be identified during this work, works must stop and advice should be sought from a suitably qualified ecologist. Development may need to be suspended until a development licence from NRW is obtained.

8.21 At the time of restoring the quarry, Pond 2 (known to support great crested newt) will be re-profiled to create a more natural waterbody with surrounding vegetated areas. It will be necessary for this work to be completed under an appropriate licence issued by NRW due to the potential for disturbance to great crested newts. It is considered likely that this will be at least 20 years in the future and therefore update surveys will be required on this pond (and others within close proximity) a year prior to the restoration of this area to determine the scale and nature of mitigation measures.

8.22 No residual effects are anticipated, as the restored site will be improved above the existing situation.

Badger

8.23 For full details of the mitigation required in relation to badgers, please refer to the confidential annex at Technical Appendix 7.

8.24 Regular (annual and prior to the commencement of each phase where appropriate) monitoring will be required across the Site to identify any new evidence of badger activity. Where new setts are recorded, a 30m stand-off will be required at all times from all heavy machinery. Should this not be possible, it will be necessary to apply for a licence from NRW for the destruction or disturbance of active badger setts.

8.25 The restoration of calcareous grassland and woodland within the Site will provide opportunities for foraging badgers in the long term and will provide opportunities for sett building in the future.

8.26 Careful management of the Site will be required to minimise the risk of creating suitable habitat for badgers in active areas of the quarry.

8.27 A Construction Environmental Management Plan (CEMP) will be produced to detail the measures required to safeguard badgers across the proposed extension area. Measures will include the requirement to cover trenches or holes overnight or have a ramp fitted or suitably graded edges to allow any mammals that may climb into these excavations to escape safely; as well as making all staff aware of the presence of badgers, and the

installation of stand-off boundary fencing in close proximity to badger setts (where necessary).

8.28 No residual effects are anticipated as the restored site will provide suitable opportunities for badgers for foraging and sett building.

Breeding Birds

8.29 When required, all works that could disturb nesting birds, for example the removal of buildings and/or vegetation (scrub, woodland, grassland and hedgerow) will occur outside of the nesting bird season which usually takes place from March to September inclusive. In the event that this is not possible then no more than 48 hours prior to vegetation removal works, a survey must be conducted by a suitably experienced ecologist, in order to check for nesting birds and to advise accordingly on the most appropriate way to proceed. Furthermore, should any active nests (from when the nest is in the process of being built, until all the nestlings have fledged) be discovered during the works, then an exclusion zone must be created around the nest. Works may then be proceed up to, but not within, this exclusion zone until an ecologist has confirmed that all young have fledged the nest. Should any nesting birds be identified during clearance works, works to the area around the nest must stop immediately and a suitably qualified ecologist called in to check the nest and advise on the most appropriate way to proceed.

8.30 The installation of additional nest boxes for jackdaws is proposed to be placed on poles or trees to provide opportunities for nesting whilst the western faces of the quarry are being impacted. These should be installed near to the western face of the quarry.

8.31 Screening bunds will be created around the external boundaries of the Site which will screen the external habitats and Crest Mawr Wood SSSI from the mineral extraction works. These screening bunds will be between 2-3m in height and will be seeded with a native grass species mix from a local wildflower mixture where possible.

Likely Success of Mitigation

8.32 The mitigation measures detailed are considered to be highly likely to succeed. All mitigation measures detailed have been used before in numerous different scenarios and proven to be successful. It may be necessary to secure these mitigation measures in

appropriately worded conditions. A Landscape and Ecological Management Plan (LEMP) will be produced to provide details. Regular monitoring will be important to identify any new activity by protected species.

Compensation

8.33 The restoration of the Site will include the creation of large areas of habitats including calcareous grassland, neutral grassland and broad-leaved woodland which are intended to qualify as priority habitat. These habitats will be suitable for nesting birds, foraging bats, foraging badgers, invertebrates and amphibians. This habitat will compensate for the loss of the habitats on the site that will be removed to allow for the proposed extension of the quarry. The woodland to be planted around the southern and westem boundaries of the proposed extension will create additional habitat that will connect Crest Mawr Woodland with the ancient woodland to the south-east of the proposed extension.

8.34 Table 6 shows the Important Ecological Feature, the nature and severity of impact upon it, the appropriate planned mitigation and resultant impact significance.

Table 6: Impacts on IEFs before and after mitigation

IEF	Nature of Impact	Impact in the absence of mitigation	Nature of mitigation	Impact significance after mitigation
Designated Sites				
Crest Mawr Wood SSSI	Potential noise and dust impacts	Medium-term negative, temporary, reversible, significant impact at the site level	Control noise and dust levels, creation of soil bunds, use of good practice measures such as use of bowser to keep dust levels reduced.	Negligible impact **Not significant**
Coed Park-Pierce CWS	Potential noise and dust impacts	Medium-term negative, temporary, reversible,	Control noise and dust levels, creation of soil bunds, use of good practice	Negligible impact **Not significant**

IEF	Nature of Impact	Impact in the absence of mitigation	Nature of mitigation	Impact significance after mitigation
		significant impact at the site level	measures such as use of bowser to keep dust levels reduced.	
Deciduous Woodland priority habitat	Potential noise and dust impacts	Medium-term negative, temporary, reversible, significant impact at the site level	Control noise and dust levels, creation of soil bunds, use of good practice measures such as use of bowser to keep dust levels reduced.	Negligible impact **Not significant**
Unimproved grassland priority habitat	Potential noise and dust impacts	Medium-term negative, temporary, reversible, significant impact at the site level	Control noise and dust levels, creation of soil bunds, use of good practice measures such as use of bowser to keep dust levels reduced.	Negligible impact **Not significant**
Habitats				
Broad-leaved semi-natural woodland	Potential noise and dust impacts	Medium-term negative, temporary, reversible, significant impact at the site level	Control noise and dust levels, creation of soil bunds, use of good practice measures such as use of bowser to keep dust levels reduced.	Negligible impact **Not significant**
Fauna				
Foraging/Commuting Bats	Removal of foraging habitat, disturbance from noise and dust.	Long-term negative, temporary, reversible, significant impact at the site level	Suitable stand-off from retained trees and boundary habitats. Phased restoration of habitats, increase and enhancement of foraging links to wider countryside.	Negligible impact. **Not significant**

IEF	Nature of Impact	Impact in the absence of mitigation	Nature of mitigation	Impact significance after mitigation
			Management of noise and dust. Creation of woodland and grassland.	
Great crested newts	Removal of terrestrial habitats and disturbance from increased noise and dust generated. Re-working of Pond 2 during final restoration of the existing quarry.	Long-term negative, temporary, reversible, significant impact at the site level	Series of reasonable avoidance measures under non-licensed method statement. Phased extraction and restoration of greater habitats. Licensed work for the re-profiling of Pond 2 during final restoration. Update surveys and assessment prior to the final restoration.	Negligible impact. **Not significant**
Badgers	Removal of foraging habitat.	Long-term negative, temporary, reversible, non-significant at the site level	Regular monitoring surveys to identify new activity. Creation of suitable foraging habitat in restoration. Production of a CEMP to detail the measures to safeguard badgers.	Negligible impact. **Not significant**
Breeding Birds	Removal of breeding and foraging habitat, disturbance from increased noise and dust levels	Long-term negative, temporary, reversible, significant impact at the site level	Sensitive removal of habitat regarding timing. Phased restoration of improved habitats, increase of foraging links to wider countryside. Creation	Negligible impact. **Not significant**

IEF	Nature of Impact	Impact in the absence of mitigation	Nature of mitigation	Impact significance after mitigation
			of screening bunds. Management of noise and dust. Management of created habitats. Installation of bird boxes.	
Peregrine	Disturbance/displacement from jackdaws displaced from western face.	Long-term negative, temporary, reversible, significant impact at the site level	Installation of nesting provision for jackdaws to ensure continued availability of faces on eastern side of quarry for peregrine.	Negligible impact. **Not significant**
Invertebrates	Destruction of habitat. Disturbance from dust.	Long-term negative, temporary, reversible, significant impact at the site level	Phased extraction and restoration of greater habitat.	Negligible impact. **Not significant**

9 Cumulative Impacts

9.1 The cumulative impacts to be considered in this assessment are as follows:

- 01/2019/0743 (Plot 1 – DCC Waste depot);
- 01/2019/0773 (Plot 2 – Yard Space Wales);
- 01/2019/0774 (Plot 3 – Henllan Bread);
- 01/2019/0775 (Plot 4 – Lock Stock);
- 01/2019/0776 (Plot 5 – Emyr Davies);
- 75 dwellings housing development at Cae Topyn;
- 60 dwelling housing development at Brookhouse; and
- 300 dwelling housing development at the former North Wales Hospital site.

9.2 Plots 1-5 involve the creation of new storage units, with associated access and parking and road widening. Loss of improved grassland, hedgerow and some broad-leaved woodland is envisaged. This site is approximately 250m to the east of the Site and involves the removal of approximately 7.5 hectares of improved grassland. Improved grassland is an extensive habitat in the wider area. The proposals also involve the loss of hedgerow and small areas of woodland., which are also extensive in the wider area. The loss of these habitats are unlikely to cause cumulative impacts.

9.3 The housing development at Cae Topyn is currently under construction and is present approximately 2km to the south-east of the quarry. The development involves the loss of approximately 3 hectares of improved grassland, with losses of small areas of hedgerow. These habitats are extensive in the local area and as such, it is unlikely that there will be any cumulative impacts as a result of the proposals.

9.4 The housing development at Brookhouse is approximately 2km to the south-east of the quarry, to the south of the Cae Topyn development. These proposals involve the loss of approximately 2 hectares of improved grassland with sections of hedgerow also to be removed. As detailed above, these habitats are extensive in the local area and as such, it is unlikely that there will be any cumulative impacts as a result of the proposals.

9.5 The housing development at the former North Wales Hospital site involves the re-development of 20 hectares of land including the demolition of buildings, and the loss of improved grassland, hedgerows and woodland. These habitats are extensive in the wider area, and providing that appropriate mitigation is in place for any protected species issues that may be present and additional habitat of ecological benefit is created, there are not anticipated to be any cumulative impacts as a result of the proposals.

9.6 The three proposed housing developments are situated at least 1.5km from the site boundary, and do not provide suitable stepping stones of habitat for species. They are all separated from the quarry by the town of Denbigh and are not considered likely to contribute to cumulative impacts.

9.7 Due to the nature of the proposed developments detailed above, their relatively small extent or their distance from the proposed quarry extension, there are not considered to be any cumulative impacts due to the lack of a loss of large areas of similar habitat or cumulative additional noise or dust in close proximity to the site.

9.8 No other development type or land use change has been identified that is considered likely to result in cumulative impacts.

Enhancements

10.1 The concept restoration for the Site involves the creation of 13.7ha of priority habitat grassland (calcareous grassland predominantly, with lowland neutral grassland and coastal and floodplain grazing marsh), as well as 5ha of broad-leaved woodland, at least 50 scattered trees, an ephemeral water feature and retained quarry benches and faces with natural regeneration.

10.2 A management plan will be put in place for the Site to ensure the long-term benefits of the restoration of the site. Regular monitoring will occur to ensure that the proposed management is functional and achieving the desired aims, and where it is not, appropriate amendments will be completed.

10.3 Bat boxes shall be erected on trees that are to be retained on the Site. These will provide additional roosting features and provide compensation for the loss of trees with potential roosting features and enhancements with the provision of additional roosting opportunities. Where suitable trees are identified, 3 bat boxes should be placed on each tree, facing in different directions to provide differing micro-habitats at a height of at least 3m above ground level. It is recommended that 12 bat boxes are erected on the Site. The bat boxes should be a combination of Schwegler 2F (double-fronted), Schwegler 1FF and Schwegler 2FN (or similar). These will provide a range of roosting features for different species of bats that have been recorded on the Site. The best location for these bat boxes is within the woodland to the north-west and south-west of the existing quarry. Details will be defined in this regard as part of the CEMP.

10.4 The ephemeral water feature to be created will be designed to have shallow sloping edges that will provide suitable habitat for great crested newt. This will be planted initially with locally sourced appropriate species and will be included within the management plan and regularly monitored to understand its success. Remedial measures will be taken to provide additional planting measures where necessary.

10.5 Bird boxes are to be erected in areas of boundary woodland. This will include a variety of nest boxes for a wide range of species with particular regard to those subject to displacement from the additional works including jackdaws. These boxes will be installed prior to the removal of any trees on the site and will be installed on retained trees or on poles where necessary.

10.6 Clear areas of quarry bench will be retained prior to the breeding season during the operational and aftercare periods to ensure the maintenance of favourable locations for peregrines to breed. Two peregrine nest boxes will also be installed prior to the extension of the quarry. If any evidence of a nest site is found on the eastern quarry face, measures should be taken to preserve this site in situ.

11 References

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15. Pleydell Smithyman Limited, (2019). *Tree Survey Report BS5837:2012 relating to Denbigh Quarry. Report Number M18.155.R.017.* Pleydell Smithyman Limited, Ironbridge.

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DRAWING M18.155.D.014

PRELIMINARY ECOLOGICAL APPRAISAL

TECHNICAL APPENDIX 1

PRELIMINARY ECOLOGICAL APPRAISAL REPORT

TECHNICAL APPENDIX 2

BREEDING BIRD SURVEY REPORT

TECHNICAL APPENDIX 3

BAT ROOST SURVEY REPORT

TECHNICAL APPENDIX 4

BAT ACTIVITY SURVEY REPORT

TECHNICAL APPENDIX 5

GREAT CRESTED NEWT SURVEY REPORT

TECHNICAL APPENDIX 6

DORMOUSE SURVEY REPORT

TECHNICAL APPENDIX 7

CONFIDENTIAL ANNEX

MUST NOT BE RELEASED INTO THE PUBLIC DOMAIN