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Henperch Quarry

Preliminary Ecological Appraisal

Prepared for Silkstone Environmental Ltd

March 2020



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Notes:	This report contains sensitive information concerning protected species and caution should be exercised when copying and distributing to third parties.	

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TABLE OF CONTENTS

EXECUTIVE SUMMARY	2
ASSESSMENT SUMMARY	2
1. INTRODUCTION	3
1.1. PROJECT BACKGROUND	3
1.2. PLANNING BACKGROUND	3
1.3. ECOLOGICAL BACKGROUND	4
1.4. PROJECT BRIEF AND OBJECTIVES	4
2. THE DEVELOPMENT PROPOSALS	5
3. SURVEY METHODOLOGY	6
3.1. STUDY AREA.....	6
3.2. DESKTOP STUDY	6
3.3. FIELD SURVEY	6
3.4. PROTECTED SPECIES	7
3.5. LIMITATION OF FIELD SURVEY	12
4. DESKTOP STUDY RESULTS	13
4.1. INTRODUCTION	13
4.2. DESIGNATED SITES	13
4.3. PROTECTED SPECIES	15
5. EXTENDED PHASE 1 HABITAT SURVEY RESULTS	18
5.1. INTRODUCTION.....	18
5.2. HABITAT DESCRIPTIONS.....	18
5.3. PROTECTED SPECIES	27
5.4. NON-NATIVE INVASIVE.....	29
6. PLANNING POLICY CONTEXT	30
6.1. NATIONAL PLANNING POLICY	30
7. EVALUATION AND RECOMMENDATIONS	33
7.1. OVERALL APPROACH TO ASSESSMENT	33
7.2. DETERMINING VALUE.....	34
7.3. DEVELOPMENT IMPACTS	35
7.4. NATURE CONSERVATION DESIGNATIONS	35
7.5. HABITATS.....	37
7.6. PROTECTED SPECIES	38
7.7. RECOMMENDATIONS.....	42
8. FIGURES	44
FIGURE 1—SITE LOCATION	44
FIGURE 2—NATURE CONSERVATION DESIGNATIONS	44
FIGURE 3—PHASE I HABITATS	44
9. REFERENCES	45
9.1. PROJECT REFERENCES	45
9.2. TECHNICAL REFERENCES	45
10. APPENDICES	47
10.1. APPENDIX 1—LIST OF SPECIES.....	47
10.2. APPENDIX 2—VALUATION CRITERIA	50

LIST OF TABLES

Table 1—Criteria for bat roost potential assessment of trees (based on Collins 2016 and Hundt, 2012)	9
Table 2—Criteria for bat roost potential assessment of buildings (based on interpretation of Collins 2016 and Hundt, 2012).....	10
Table 3— Criteria for habitat suitability assessments (based on interpretation of Collins 2016 and Hundt, 2012)	11
Table 4—Non-Statutory Designations within 2km of the site	13
Table 5—Summary of WYE Bat Records.....	15
Table 6—Summary of WYE Amphibian Records	17
Table 7—Pond HSI Scores Summary	29
Table 8—Ecological Importance Summary Table.....	54

LIST OF PHOTOGRAPHS

Photograph 1—Under-grazed tree planting at TN3	19
Photograph 2 and 3—Mixed Plantation woodland (TN12 and TN13)	20
Photograph 4 and 5—Coarse semi-improved grassland	20
Photograph 6—Moderately diverse neutral grassland (TN16) and pond 5 in background ...	21
Photograph 7—Improved grassland (TN11) on unworked ground.....	22
Photograph 8—Screening bund with coarse grassland and ruderal vegetation	22
Photograph 9—Pond 1 (left) and Pond 2.....	23
Photograph 10—Pond 3 showing heavily shaded conditions and lack of aquatic vegetation	24
Photograph 11—Wet ditch adjacent to hedgerow H2	24
Photograph 12—Pond 5.....	25
Photograph 13—Quarry void.....	25
Photograph 14—hedgerow H2 in background and improved grassland in foreground	26
Photograph 15 and 16—Pond 5 showing well developed aquatic vegetation	29

EXECUTIVE SUMMARY

Wavin (UK) Ltd is seeking planning permission for an extension of time for a further 10 years at their existing Henperch Quarry, Denby Dale West Yorkshire.

RDF Ecology were appointed to undertake a desktop study, extended phase I habitat and protected species walkover survey and to prepare a preliminary ecological appraisal report.

The site comprises an existing quarry area along with previously restored land containing improved and semi-improved grassland and extensive areas of mixed planation woodland. Other habitats present included ponds, scrub and ruderal vegetation.

Assessment Summary

Survey Item	Conclusions
Designated Sites	No impacts upon designated sites are predicted and no further survey and assessment work are recommended.
Habitats	The habitats within the site have limited botanical value and the loss of areas of improved grassland, scrub and shaded pond vegetation would be compensated through final site restoration at the cessation of quarrying operations which would result in a net biodiversity gain and therefore no further survey or assessment work is recommended.
Bats—Buildings and Structures	There are no buildings within the site. No impacts upon roosting bats in buildings are predicted and no further survey or assessment work is recommended.
Bats—Trees and Habitats	There are no trees with potential roost features to be removed or directly affected by the proposed development and no significant commuting routes would be disrupted. No significant impacts upon commuting or feeding bats or upon bats roosting in trees are predicted and no further survey and assessment work is recommended.
Badger	No evidence of badger activity was recorded and no impacts upon badgers are predicted and no further survey or assessment work is recommended.
Otter	The site does not contain any habitats of potential value to otters, no evidence of otter activity was recorded during the field survey. No impacts upon otters are predicted and no further survey or assessment work for otters is recommended.
Water Vole	The site does not contain any habitats of potential value to water vole, no evidence of water vole activity was recorded during the field survey. No impacts upon water vole are predicted and no further survey or assessment work for water vole is recommended.
Breeding Birds	No significant impacts upon nesting birds are predicted and no further ornithological survey work is recommended.
Amphibians	No impacts upon amphibians are predicted and no further survey work is recommended.
Reptiles	No significant impacts upon reptiles are predicted and no further survey work is recommended.
Recommendations	
Bat	Any trees that are to be removed should be re-surveyed again if they have not been removed within 2 years of the date of this report.
Breeding Birds	That removal of trees, shrubs and surface vegetation should be completed outside of the bird breeding season (March to September inclusive). Where this is not possible a suitably qualified and experienced ecologist should complete a survey of the site immediately prior to completion of the proposed works to search for nesting birds and to advise on exclusion zones or timing of works if nesting birds are recorded.

1. INTRODUCTION

1.1. Project Background

- 1.1.1. Wavin (UK) Ltd is seeking planning permission for an extension of time for a further 10 years at their existing Henperch Quarry, Denby Dale West Yorkshire (hereafter referred to as 'the site') whose location and extent is shown in Figure 1.

1.2. Planning Background

- 1.2.1. The quarry is currently being worked under planning permission 2009/70/91780/E0 (granted 4th March 2010) which was a Section 73 application for a variation of conditions under planning permission: 91/62/01709/C5 (granted 20th Sept 1991). The current permission states that the extraction of all minerals shall be completed by 31st December 2021 and the site fully restored by 31st October 2023.

- 1.2.2. The pre-application response from Kirklees Council noted the following of relevance to this report:

"Since approval of the operative planning permission in 2010 additional ecological constraints have been identified within the site and its immediate surroundings. Currently, known ecological constraints include the following.

- *Presence of Hob Royd Shrogg and Miry Greaves Shrogg Local Wildlife Site immediately north of the existing worked area.*
- *Areas of woodland and hedgerows within and surrounding the site identified as part of the Kirklees Wildlife Habitat Network, which identifies habitats that are likely to be important for the movement of wildlife at a district and wider scale.*
- *General suitability of this area for foraging and roosting bats.*

Due to the above the Council considers that it will be necessary to review the approved restoration scheme to ensure this is still appropriate in relation to the sites current ecological value of the site and emerging local plan policies.

It is therefore requested that the applicant should engage a suitable qualified ecologist to undertake a Preliminary Ecological Appraisal (PEA) in accordance with national guidelines. This work will determine the potential for significant ecological impacts, identify opportunities for ecological enhancement and determine if further survey is required. The results of the PEA, and any additional survey identified as necessary, should be used as a basis for validating or revising the existing restoration

plan, and identifying any impact avoidance or mitigation measures necessary. Ideally this information should be presented in an Ecological Impact Assessment.

Furthermore, bearing in mind the time that has elapsed since the approval of the site's restoration scheme and recent issues that have arisen relating to certain tree species such as Ash Die back, should a subsequent planning application be submitted it is requested that this issue to fully considered and amended planting details are provided in support of the application should these be necessary"

1.3. Ecological Background

- 1.3.1. There have been no previous ecological surveys of the site.

1.4. Project Brief and Objectives

- 1.4.1. **RDF** Ecology has been appointed to undertake a desktop study, extended phase I habitat and protected species walkover survey and report on the findings to address the issues raised by Kirklees Council in their pre-application response.
- 1.4.2. The objectives of the commission were to:
- To complete a desk-top study to review any existing information regarding protected or notable species and designated sites within a 2 kilometre (km) radius of the site;
 - To undertake an extended phase 1 habitat and protected species walkover survey to describe and map the habitats on the site and to identify the presence or potential presence of any protected or notable species;
 - To identify and assess potential ecological constraints to the proposed development;
 - To prepare a preliminary ecological appraisal report
 - To provide recommendations for further ecological surveys where necessary; and,
 - Recommend appropriate mitigation measures to enable compliance with wildlife legislation, offset potential negative ecological effects and enhance biodiversity through a revised restoration plan where possible.
- 1.4.3. This report describes the findings of the desktop study and field survey work, considers the potential impacts arising from the proposed development and proposes appropriate mitigation measures.

2. THE DEVELOPMENT PROPOSALS

- 2.1. The proposals considered by this preliminary ecological appraisal are for a 10 year extension of time for quarrying operations.
- 2.2. Quarrying involves the removal of topsoil, subsoil and other superficial deposits followed by the removal of overburden and clay. The clay would be removed from the site and transported to Wavin Ltd processing works at Hazlehead.
- 2.3. The mineral would be extracted from the exposed benches using a mechanical / hydraulic excavator and loaded directly into HGV lorries for transport off site.
- 2.4. It is proposed to continue the current phased extraction that was devised to limit the quarry working area and ensure that the quarrying operations have a minimum effect on the local environment. Site development will be undertaken predominantly during the spring and summer period on an annual basis and it is anticipated that the duration of the development and associated restoration works will be in the order of 10 to 12 weeks per annum.
- 2.5. The phased extraction has been devised to limit the quarry working area and ensure that the quarrying operations have a minimum effect on the local environment.
- 2.6. The development will involve the loss of habitats within the extant planning permission and the application for an extension of time will not seek to increase the area of currently approved quarrying operations.
- 2.7. Ecological effects will remain as previously approved and include the loss of hedgerow, and improved agricultural grassland.
- 2.8. The restoration plan has been revised in order to maximise its ecological potential and to take account of Kirklees Councils pre-application comments.

3. SURVEY METHODOLOGY

3.1. Study Area

- 3.1.1. The study area extended to the whole of the currently permitted quarry operations and adjacent land owned by the applicant and is shown in Figure 1.

3.2. Desktop Study

- 3.2.1. A desk study was carried out in accordance with the Chartered Institute of Ecology and Environmental Management (CIEEM) 'Guidelines for Preliminary Ecological Appraisal' (2017). Records of any protected or notable species, habitats and designated nature conservation sites within a 2 km radius of the site were obtained and reviewed. This radius was extended to 10km for International and European conservation sites including Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Ramsar sites.
- 3.2.2. The following organisations were contacted for protected sites and species data:
- West Yorkshire Ecology (WYE)
- 3.2.3. Additional information on sites and species of nature conservation interest was obtained from:
- Multi Agency Geographic Information for the Countryside (MAGIC) website;
 - Natural England web site and online SSSI database;

3.3. Field Survey

- 3.3.1. The extended phase I habitat study area covered the whole site and extended 50m beyond the site boundary where access was possible.

3.3.1. Extended Phase I Habitat Survey Methodology

- 3.3.1.1. An extended phase 1 habitat survey of the site was completed on 15 January 2020. All habitats within the site were surveyed.
- 3.3.1.2. Habitats present on the site were classified and mapped according to the Joint Nature Conservation Committee (JNCC) Phase 1 Habitat survey methodology (JNCC, 2010).
- 3.3.1.3. A phase 1 habitat survey provides sufficient information on the composition of the vegetation present to enable it to be characterised and assessed.

- 3.3.1.4. Fauna and flora present at the time of survey were recorded and the site was assessed for its potential to support notable and/or protected species that could be impacted by development following CIEEM guidance (CIEEM, 2017 and 2018).
- 3.3.1.5. Target notes were prepared for any features of ecological interest and their locations noted in Figure 3. Plant species were recorded following the nomenclature in Stace (1997) and lists of species are included in Appendix 1.

3.4. Protected Species

3.4.1. Badger

- 3.4.1.1. Areas of suitable habitat on site and within 50m of the site boundary (where accessible) were searched for evidence of badger with reference to the methodology defined in Harris et al. (1991). The following field signs were recorded, if encountered, during the protected species walkover survey:
- Setts;
 - Latrines;
 - Prints and paths or trackways;
 - Hairs caught on rough wood or fencing; and
 - Other evidence including snuffle holes, feeding remains and scratching posts.
- 3.4.1.2. Where setts were recorded, their status and level of activity was noted. Sett status is broadly categorised as follows:
- Main: generally the largest sett within a badger clan's territory, with a relatively large number of sett entrances with well-worn pathways between them, and conspicuous spoil mounds. This type of sett will be occupied throughout the year and used for breeding;
 - Annexe: normally found within 150m of the main sett comprising many entrances, this type of sett may not be occupied throughout the year, and can be used for breeding if there is more than one breeding sow within the clan;
 - Subsidiary: similar to an annexe sett, but typically located further from the main sett. This type of sett will not be occupied throughout the year and lacks the well-worn paths associated with main and annexe setts; and
 - Outlier: consisting of one or two entrances, this type of sett will be found furthest from the main sett and will only be used sporadically throughout the year.

- 3.4.1.3. The suitability of the existing habitats on site, as badger breeding and foraging habitat, was assessed.

3.4.2. Otter

- 3.4.2.1. Areas of suitable habitat on site and within 50m of the site boundary (where accessible) were searched for evidence of otter (*Lutra lutra*). The following field signs were recorded, if encountered, during the protected species walkover survey:
- Sightings of Otters
 - Otter Holts
 - Otter footprints
 - Otter spraints
 - Otter slides
- 3.4.2.2. The suitability of the existing habitats on site, as otter breeding and foraging habitat, was assessed.

3.4.3. Water Vole

- 3.4.3.1. Areas of suitable habitat on site and within 50m of the site boundary (where accessible) were searched for evidence of water vole (*Arvicola amphibius*). The following field signs were recorded, if encountered, during the protected species walkover survey:
- Sightings of Water Voles
 - Water Vole tunnel entrances
 - Water Vole "lawns"
 - Water Vole feeding stations
 - Water Vole latrines
 - Waterside paths
 - Runs in vegetation
 - Water Vole footprints
 - Sounds of Water Voles 'plopping' into the water
- 3.4.3.2. The suitability of the existing habitats on site, as water vole breeding and foraging habitat, was assessed.

3.4.4. Bats

- 3.4.4.1. Whilst completing the extended phase I habitat survey a preliminary bat roost assessment was undertaken in accordance with best practice guidelines (Collins 2016 and Hundt, 2012).

Tree Assessment

- 3.4.4.2. Trees within or immediately adjacent to the site were assessed for their potential to support roosting bats in accordance with best practice guidelines (Collins 2016 and Hundt, 2012). The trees were examined from the ground using binoculars and a high-powered torch where

appropriate to look for any potential roost features (PRF's) such as natural holes, woodpecker holes, cracks/splits in major limbs, loose bark, thick stemmed ivy growth, hollows/cavities and within dense epicormic growths. The trees were classified according to the criteria detailed in Table 1 below, based upon the visible PRF's identified during the ground levels survey. For extensive areas of woodland, where all trees could not be fully checked the woodland as a whole, was assessed for its potential for roosting bats based upon the overall age and character of the trees present.

Table 1—Criteria for bat roost potential assessment of trees (based on Collins 2016 and Hundt, 2012)

Tree Category	Description
Confirmed	Tree with features confirmed to be used by roosting bats either by historic records (verified appropriately), or evidence recorded during survey.
High	Tree with many suitable PRF's capable of supporting larger roosts. The tree is located within habitat that is connected to wider landscape by strong linear features that may be used by commuting bats e.g. river valley, streams and hedgerows.
Moderate	Tree with definite bat roost potential but with fewer larger PRF's or several PRF's with the potential to be used by individual/small numbers of bats. Surrounding area includes good quality foraging habitat for bats e.g. broadleaved woodland, tree-lined watercourses and grazed parkland; or tree with highly suitable features though its context is less optimal.
Low	Tree with less PRF's capable of supporting only individual/small numbers of bats within a suboptimal location; tree in suitable habitat and of a size and age that elevated surveys are considered likely to result in cracks or crevices being found; or tree with definite bat roost potential which is isolated and within low quality foraging habitat meaning that the presence of a roost is considered less likely.
Negligible	Tree with no visible PRF's, or very few or minor features in an isolated/unsuitable location such that the presence of a roost is considered highly improbable e.g. isolated from suitable foraging or commuting habitats.

Buildings Assessment

- 3.4.4.3. Buildings within the site were visually assessed from ground level for potential roost features (PRF's) and evidence of bat activity using binoculars to view upper floor areas and roofs along with a one million candlepower torch to aid visibility.
- 3.4.4.4. The external ground level survey sought to identify features that could be used by roosting bats such as small gaps in the pointing and brickwork, gaps around barge/soffit/fascia boards, raised or missing ridge tiles and gaps at gable ends, all of which provide potential access points for roosting bats. Evidence of use by bats included the presence of a live or dead bat, accumulations of bat droppings, feeding remains or urine staining. The presence of cobwebs, bird nests and general detritus within PRF's was taken as an indication that they were unlikely to be used by bats.

- 3.4.4.5. Where safe internal access was possible, buildings were thoroughly examined for any evidence of bat activity including looking for live or dead bats, droppings, feeding remains or staining. Specifically, the visual survey involved looking for the following evidence:
- Bat droppings on walls, windowsills and in roof spaces
 - Scratch marks and staining on beams, other internal structures and potential entrance and exit holes
 - Wing fragments of butterfly and moth species underneath beams and other internal structures
 - The presence of dense spider webs at a potential roost can often indicate absence of bats
 - Examination of crevices and cracks in the buildings to assess their importance for roosting bats
- 3.4.4.6. Buildings are classified as having high, medium, low or negligible risk for containing bat roosts based upon the type and construction of the building, the number and quality of potential roost features present, and the building position in relation to the surrounding environment. Table 2 below summarises the criteria used for bat roost potential assessment of buildings.
- 3.4.4.7. A high risk building would typically be an older building with a several potential roost features and perhaps limited evidence of bat activity such as feeding remains or small amounts of droppings and will be situated close to high quality bat foraging habitats such as woodland.
- 3.4.4.8. Negligible risk buildings will typically be of modern, well-sealed construction with no or very few potential roost features often located within an area of poor quality habitat such as urban environments.

Table 2—Criteria for bat roost potential assessment of buildings (based on interpretation of Collins 2016 and Hundt, 2012)

Low Risk	Medium Risk	High Risk
Modern well maintained buildings or structures with few PRF's	Poorly maintained modern or older buildings with a small number of PRF's visible during ground level surveys	Older buildings with several PRF's visible during ground levels surveys.
No easily identifiable PRF's such as gaps within stonework or between tiles.	Some PRF's visible. May be obscured by cobwebs or detritus.	Several PRF's visible.
No roof void	Small or cluttered roof void	Large roof void with unobstructed flying spaces
No external cavities such as crevices within wall or behind fascia boards	Few external cavities with those present of low suitability	A variety of external features offering a range of roosting locations

Low Risk	Medium Risk	High Risk
Located within areas of poor quality habitat, away from bat foraging or commuting routes	Area offering some habitat features likely to be used by bats	Good connectivity to high quality habitats
Not part of a group of buildings	Part of a group of buildings, all offering similar roosting opportunities	Part of a group of buildings offering a range of different conditions and potential roost locations
Heavily disturbed	Potential roosting locations suffering little disturbance	Building disused or little used, largely undisturbed

Habitat Assessment

3.4.4.9. Habitat within and adjacent to the site boundary was assessed for its suitability for commuting and feeding bats in accordance with current guidance (Table 4.1 in Collins, 2016) with habitats categorised as having negligible, low, moderate or high suitability for commuting and feeding bats and are summarised in Table 3 below:

Table 3— Criteria for habitat suitability assessments (based on interpretation of Collins 2016 and Hundt, 2012)

Habitat Suitability	Description
High	Continuous high quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, stream, hedgerows, lines of trees and woodland edge. High quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree lined watercourses and grazed parkland Site is close to and connected to known roosts.
Moderate	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
Low	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or unvegetated stream, but isolated i.e. not very well connected to the surrounding landscape by other habitat. Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland setting) or a patch of scrub.
Negligible	Negligible habitat features on site likely to be used by commuting or foraging bats.

3.4.5. Wild Birds

3.4.5.1. Habitat within and adjacent to the site boundary was assessed for its suitability for nesting birds. Bird species seen or heard during the survey were recorded.

3.4.6. Amphibians

Habitat Suitability Index Assessment

3.4.6.1. All accessible water bodies within 500m of the site, which are not separated from the site by significant barriers to amphibian movement, were assessed for their suitability as aquatic habitat for Great Crested

Newts (*Triturus cristatus*) (GCN) using the criteria in the HSI assessment method developed by Oldham et al (2000) and modified further by the Amphibian and Reptile Groups of the United Kingdom (ARG 2010).

3.4.7. Reptiles

- 3.4.7.1. Any casual observations of reptiles within the site were recorded and the habitats within the site were assessed for their potential value for reptiles.

3.5. Limitation of Field Survey

- 3.5.1. The extended phase 1 habitat survey was undertaken on 15 January 2020 outside the period generally considered to be the optimal vegetation survey period (i.e. April to September). However, despite the timings of the survey the nature of the modified habitats recorded on site it is considered that no significant limitations are present in the assessment of the site for protected/notable species and habitats. However, an extended phase 1 habitat survey does not comprise a full botanical assessment of all species present within a site; therefore species lists are indicative only.
- 3.5.2. The baseline conditions described in this report are accurate at the time at which the survey was undertaken. Should any considerable time pass (e.g. more than 2 years) and/or conditions/land-use on the site change prior to the commencement of works, it is recommended that an up-date survey is undertaken.

4. DESKTOP STUDY RESULTS

4.1. Introduction

- 4.1.1. The desk study results are summarised below and include a review of data provided by WYE
- 4.1.2. Data older than 10 years is considered to be less important than more recent data due to the length of time that has elapsed since being collected (and the chance that they are no longer valid for a current assessment) and these have therefore been excluded from the protected species summary unless the historical records are the sole record for that particular species.

4.2. Designated Sites

- 4.2.1. Nature Conservation designations within 2km of the site are shown in Figure 2.

4.2.1. Statutory Designated Sites

- 4.2.1.1. The site is not covered by any statutory nature conservation designations and there are no sites covered by statutory nature conservation designations within 2km of the site boundary.
- 4.2.1.2. The closest site covered by a statutory nature conservation designation is Bretton County Park Local Nature Reserve located approximately 5.5km north east of the application site boundary.

4.2.2. Non-Statutory Designated Sites

Local Wildlife Sites

- 4.2.2.1. The site is not covered by any non-statutory nature conservation designations. However the desktop study data indicates that there are 6 Local Wildlife Sites (LWS) within 2 km of the site boundary including Hob Royd Shrogg and Miry Greaves Shrogg which lies immediately adjacent to the northern site boundary. Table 4 below summarises the LWS within 2km of the site boundary.

Table 4—Non-Statutory Designations within 2km of the site

Site Name	Designation	Distance from Site at nearest point
Blacker Wood	LWS	1.2km N
Deffer Wood	LWS	1.6km E
High Bridge Wood	LWS	250m NE
Hob Royd Shrogg and Miry Greaves Shrogg	LWS	0m N
Park Gate Dyke	LWS	1.4km N
Riding Wood	LWS	1.8km NE

Kirklees Wildlife Habitat Network

- 4.2.3.1. West Yorkshire Ecology have identified the extent of the Kirklees Wildlife Habitat Network (KWHN) which connects designated sites of biodiversity and geological importance and notable habitat links within the district, such as woodlands, watercourses, natural and semi-natural areas. The identification of the Wildlife Habitat Network (WHN) is intended to protect and strengthen ecological links within the district.
- 4.2.3.2. The purpose of the network is to enable species populations to be sustained by protecting and enhancing the ecological corridors and linkages within the wider environment, including links to adjoining districts. Development within the WHN will not necessarily be prevented but the council will seek to ensure that development proposals maintain the continuity of the network and protect the nature conservation of the land affected.
- 4.2.2.2. The site is partially located within habitats included within the KWHN and the areas identified include the plantation woodland, wetland and grassland areas on the restored quarry site which are largely isolated from the wider KWHN, except for the mature hedgerow that runs along the eastern site boundary (**H3**) which links the plantation woodland within the site to the WHN to the north which including Hob Royd Shrogg and Miry Greaves Shrogg LWS.

4.2.3. Kirklees Bat Alert Zone

- 4.2.3.1. The Kirklees Bat Alert Zone has been determined by WYE and identifies areas within 200m of significant water or woodland, features which are good bat feeding habitat.
- 4.2.3.2. The eastern portion of the site which includes the active quarry and associated earth bunds along with a strip of restored land adjacent to Wakefield Road is included in the Kirklees Bat Alert Zone as a consequence of it lying within the 200m buffer zone established around Hob Royd Shrogg and Miry Greaves Shrogg LWS to the east and the River Dearne which flows to the south of Wakefield Road. The habitats within the quarry.
- 4.2.3.3. Hedgerow **H3** provides an excellent north-south commuting route between habitats within the restored portion of the site the woodland associated with Hob Royd Shrogg and Miry Greaves Shrogg LWS

4.3. Protected Species

4.3.1. Bats

- 4.3.1.1. WYE data search returned 81 bat records within 2km of the site boundary and these are summarised in table 5 below.

Table 5—Summary of WYE Bat Records

Species	Number of Records	Closest Record to Site
Brown Long-Eared Bat (<i>Plecotus auritus</i>)	3	1.75km
Common Pipistrelle (<i>Pipistrellus pipistrellus</i>)	15	65m
Soprano Pipistrelle (<i>Pipistrellus pygmaeus</i>)	5	614m
Pipistrelle Bat species (<i>Pipistrellus spp.</i>)	35	436m
Noctule (<i>Nyctalus noctula</i>)	15	454m
Unidentified Bat (<i>Vespertilionidae</i>)	8	411m
Totals	81	

- 4.3.1.2. The closest identified roost was of common pipistrelle located 65m from the site boundary from a property on Wakefield Road adjacent to the site.
- 4.3.1.3. There were several more records of common pipistrelle, soprano pipistrelle and unidentified pipistrelle species and bats from properties up to 650m to the west of the site in Denby Dale including several old records of unidentified bat species dating from 1985 to 2011. There was a single record from 2009 of noctule near Pingle Nook Farm approximately 450m south of the site.
- 4.3.1.4. There were no bat records relating specifically to the application site.

4.3.2. Badgers

- 4.3.2.1. WYE has recently changed the way that they display badger records in data searches due to the sensitivity of the records. They have created a 'zone' showing the increased probability of badger activity in an area. This has been done by taking badger records and placing a buffer of 837m (the square root of the average badger territory from Badger (Michael Clark) Whittet Books – 70ha) around each record. This then shows a zone of the increased probability of badger activity across West Yorkshire.
- 4.3.2.2. If there are badger records within 200m of the site centroid/boundary, a more detailed confidential badger report showing the badger records will be mapped and a spreadsheet with details of each record will be provided. If there are no sett records within 200m, WYE will supply the distance to the nearest known sett record if within the 2km. The records

do not contain the grid reference, but do include a calculated distance from the site centroid/boundary.

4.3.2.3. This increased probability zone information is to be used to help ecological consultants justify the need for full badger surveys. We would expect them to:

- a) See if the site falls within the “likely probability of badger activity” zone.
- b) Assess the habitat as part of the Preliminary Ecological Assessment.
- c) Use the 200m buffer detailed record information to try to locate all known setts.
- d) Recommend a more detailed survey if required.
- e) Undertake a full badger survey if required, assess habitat resource within likely territory and potential impact on any setts.
- f) Recommend mitigation and habitat enhancement.

4.3.2.4. The data from WYE indicated that there are no known badger setts within 1.8km of the site boundary and that the site does not fall within an area of increased probability of badger activity.

4.3.3. Otters

4.3.3.1. The data search identified 2 records of otter (*Lutra lutra*) within 2km of the site boundary from 2006 and these were from a location approximately 1.8km NE of the Site. These two records were from the same data and may well be duplicate records in the database.

4.3.3.2. There were no otter records for the application site.

4.3.4. Water Vole

4.3.4.1. The data search did not identify any water vole records from the site or within 2km of the site boundary.

4.3.5. Wild Birds

4.3.5.1. The data search returned a total of 30 bird records with 22 of these dating back to surveys between 1970 and 1988 from an area of woodland east of Wood Farm and approximately 1.8km south west of the site boundary.

4.3.5.2. The remaining records were from 2003 (4 records) and 2013 (4 records)

4.3.5.3. The closest record to the site was of a dunnock (*Prunella modularis*) recorded from Wither Wood approximately 650m west of the site

4.3.5.4. There were no bird records for the application site.

4.3.6. Amphibians

- 4.3.6.1. The data search returned 95 amphibian records of four species from the 2km search area and these are summarised in Table 6 below.

Table 6—Summary of WYE Amphibian Records

Row Labels	Number of Records	Closest Record to Site
Common Frog (<i>Rana temporaria</i>)	29	1184
Common Toad (<i>Bufo bufo</i>)	7	1628
Great Crested Newt (<i>Triturus cristatus</i>)	40	545
Smooth Newt (<i>Lissotriton vulgaris</i>)	19	1208
Total	95	

- 4.3.6.2. All of the amphibian records were more than 1km of the site boundary with the exception of a single great crested newt record dating from 2000 which related to a record at Ingle Nook Farm approximately 545m south of the site.
- 4.3.6.3. There were no amphibian records for the application site.

4.3.7. Reptiles

- 4.3.7.1. WYE provided three records for grass snake (*Natrix natrix*) with one record dating from 1914. The two more recent records were both from 2014 and related to records from Common Side approximately 1.7-1.8km west of the site boundary.
- 4.3.7.2. There were no reptile records for the application site.

5. EXTENDED PHASE 1 HABITAT SURVEY RESULTS

5.1. Introduction

- 5.1.1. The results of the extended phase 1 habitat survey are presented below. Figure 3 illustrates the location and extent of all habitat types recorded on site, with notable features or features too small to map highlighted using Target Notes (TN). A list of species recorded on the site is included in Appendix 1.

5.2. Habitat Descriptions

- 5.2.1. The following Phase 1 habitat types (JNCC codes in parenthesis) were recorded on site during the field survey:
- Broadleaved Plantation Woodland (A1.1.2);
 - Mixed Plantation Woodland (A1.3.2);
 - Dense Scrub (A2.1);
 - Semi-improved Neutral Grassland (B2.2);
 - Improved Grassland (B4);
 - Tall Ruderal and Semi-improved Neutral Grassland Mosaic (B2.2/C3.1);
 - Inundation vegetation (F2.2);
 - Standing Water (G1.1);
 - Quarry (I2.1);
 - Hedgerows (J2.2.2 and J2.3.2); and,
 - Bare Ground (J4)

5.2.1. Broadleaved Plantation Woodland (A1.1.2)

- 5.2.1.1. A small area of native broad-leaved plantation woodland (**TN18**) was recorded to the south of the large pond (**pond 5**) on the restored part of the site. Species here included alder (*Alnus glutinosa*), silver birch (*Betula pendula*), ash (*Fraxinus excelsior*), sycamore (*Acer pseudoplatanus*), and pedunculate oak (*Quercus robur*) and goat willow (*Salix caprea*) along with some hazel (*Corylus avellana*), hawthorn (*Crataegus monogyna*) and less frequent blackthorn (*Prunus spinosa*) and one or two scot's pine (*Pinus sylvestris*).
- 5.2.1.2. The ground vegetation comprised coarse grasses including cock's-foot (*Dactylis glomerata*), false oat-grass (*Arrhenatherum elatius*) and Yorkshire fog (*Holcus lanatus*) along with developing stands of bramble

(*Rubus fruticosus* agg.) underscrub and large stands of common nettle (*Urtica dioica*).

- 5.2.1.3. Other species recorded at low abundance included herb Robert (*Geranium robertianum*), white dead-nettle (*Lamium album*) and ivy (*Hedera helix*).

5.2.2. Mixed Plantation Woodland (A1.3.2)

- 5.2.2.1. There are several large areas of mixed plantation woodland on restored quarry areas (**TN2, TN3, TN12, TN13 and TN17**) and all are well established the exception of the planting at TN3 where the planting is young, open and has been under grazed by livestock leading to a loss of some of the planted trees. The species here included ash, silver birch, pedunculate oak, hawthorn and occasional scot's pine with a ground cover of improved agricultural grassland dominated by perennial rye-grass (*Lolium perenne*), common bent (*Agrostis capillaris*) and red fescue (*Festuca rubra*) with some cock's-foot and Yorkshire fog.



Photograph 1—Under-grazed tree planting at TN3

- 5.2.2.2. The remaining areas of tree planting have all developed well with a developing canopy of silver birch, pedunculate oak, ash, alder and scot's pine along with wild cherry (*Prunus avium*), European larch (*Larix decidua*) and occasional Rowan (*Sorbus aucuparia*). Shrub species included hazel, hawthorn, holly (*Ilex aquifolium*) goat willow and very occasional field maple (*Acer campestre*) and dog rose (*Rosa canina* agg.).
- 5.2.2.3. The ground vegetation comprised coarse grassland with perennial rye-grass, Yorkshire fog, cock's-foot, false oat-grass and common couch (*Elytrigia repens*) along with large stand of common nettle and bramble underscrub. Where the canopy was denser the grass vegetation was beginning to be shaded out.

- 5.2.2.4. Other species recorded included some garlic mustard (*Alliaria petiolata*), cow parsley (*Anthriscus sylvestris*), cleavers (*Galium aparine*), ivy and herb Robert along with rarely encountered broad buckler-fern (*Dryopteris dilatata*) and wood avens (*Geum urbanum*).



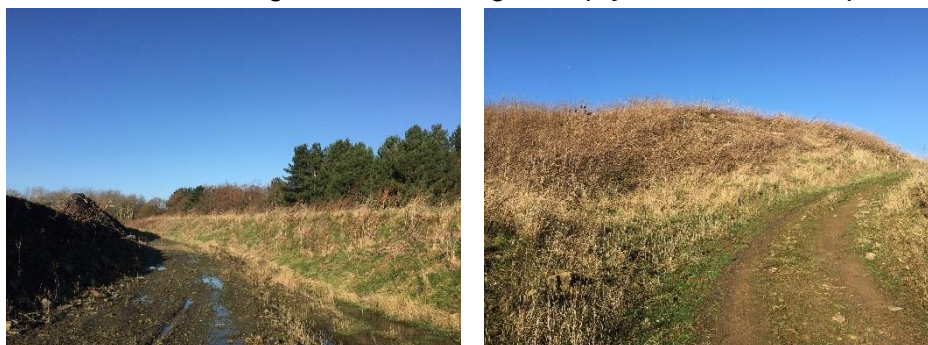
Photograph 2 and 3—Mixed Plantation woodland (TN12 and TN13)

5.2.3. Dense Scrub (A2.1)

- 5.2.3.1. An area of dense willow scrub has developed around two old settlement ponds at **(TN9)**. The canopy is dominated by goat willow with some crack willow (*Salix fragilis*) and hawthorn around the margins. The ground cover is sparse with large areas of bare ground and comprised shade tolerant grasses including Yorkshire fog and occasional creeping soft-grass (*Holcus mollis*) along with some ivy and bramble underscrub.

5.2.4. Semi-improved Neutral Grassland (B2.2)

- 5.2.4.1. Areas of species poor semi-improved neutral grassland were noted around the margins of the existing quarry void **(TN3, TN5 and TN10)** typically associated with raised soils bunds and species here included frequent to abundant false oat-grass, cock's-foot, Yorkshire fog and common couch along with common bent, red fescue and perennial rye-grass. Sweet vernal grass (*Anthoxanthum odoratum*) was noted occasional along with crested dog's-tail (*Cynosurus cristatus*).



Photograph 4 and 5—Coarse semi-improved grassland

- 5.2.4.2. Broad leaved species were generally recorded at low abundance and included yarrow (*Achillea millefolium*), common mouse-ear (*Cerastium fontanum*), smooth hawk's-beard (*Crepis capillaris*), hogweed (*Heracleum*

sphondylium), cat's-ear (*Hypochaeris radicata*), ribwort plantain (*Plantago lanceolata*), creeping buttercup (*Ranunculus repens*), ragwort (*Senecio jacobaea*), dandelion (*Taraxacum officinale* agg.), white clover (*Trifolium repens*) and occasional red clover (*Trifolium pratense*). Ruderal and robust perennial species included occasional to locally frequent broad-leaved dock (*Rumex obtusifolius*), creeping thistle (*Cirsium arvense*), teasel (*Dipsacus fullonum*) along with rosebay willowherb (*Chamerion angustifolium*), weld (*Reseda luteola*) and mugwort (*Artemisia vulgaris*).

- 5.2.4.3. The restored grassland (**TN16**) around **pond 5** was much more diverse and in addition to the species noted above, which were all found at much greater abundance, contained common knapweed (*Centaurea nigra*), perforate St John's-wort (*Hypericum perforatum*), red dead-nettle (*Lamium purpureum*), oxeye daisy (*Leucanthemum vulgare*), common bird's-foot-trefoil (*Lotus corniculatus*), black medick (*Medicago lupulina*), Silverwood (*Potentilla anserina*), meadow buttercup (*Ranunculus acris*), yellow rattle (*Rhinanthus minor*), tufted vetch (*Vicia cracca*) and hairy tare (*Vicia hirsuta*). This was the most diverse area of grassland recorded from the site during the field survey.

- 5.2.4.4. Parts of the sward contained some invading hawthorn and silver birch scrub along with occasional broom (*Cytisus scoparius*) plants.



Photograph 6—Moderately diverse neutral grassland (TN16) and pond 5 in background

5.2.5. Improved Grassland (B4)

- 5.2.5.1. Improved grasslands are present on both restored and unworked ground and was typically sheep grazed with a low, compact grass dominated sward of perennial rye-grass with red fescue and common bent along with occasional crested dog's-tail and sweet vernal grass.
- 5.2.5.2. Broad-leaved species were typically at low abundance and included white clover, dandelion, ribwort plantain, creeping buttercup, common mouse-ear and less frequent red clover and common sorrel (*Rumex acetosa*).



Photograph 7—Improved grassland (TN11) on unworked ground

- 5.2.5.3. Around gate entrances the sward was heavily poached by livestock with large patches of bare ground present and here greater plantain (*Plantago major*) was more abundant along with knotgrass (*Polygonum aviculare* agg.), pineapple weed (*Matricaria discoidea*), scentless mayweed (*Tripleurospermum inodorum*), common chickweed (*Stellaria media*) and annual meadow-grass (*Poa annua*).

5.2.6. Tall Ruderal and Semi-improved Neutral Grassland Mosaic (B2.2/C3.1)

- 5.2.6.1. On areas of disturbed ground, in particular earth screening bunds and topsoil mounds the coarse grassland vegetation described above has become more heavily invaded by a range of ruderal species including broad-leaved dock, creeping thistle, spear thistle (*Cirsium vulgare*) mugwort, teasel, hogweed, weld, wild mignonette (*Reseda lutea*) rosebay willowherb and hedge mustard (*Sisymbrium officinale*) to create a mosaic of grassland and ruderal vegetation.



Photograph 8—Screening bund with coarse grassland and ruderal vegetation

5.2.7. Swamp Vegetation (F1)

- 5.2.7.1. The two small settling ponds in the east of the site (**Ponds 1 and 2 at TN5**) are used for sediment trapping for water pumped from the quarry workings. **Pond 1** contained shallow muddy water during the survey with a small stand of bulrush (*Typha latifolia*) in the centre of the pond along with large stands of soft rush and floating sweet-grass (*Glyceria fluitans*) and some creeping bent (*Agrostis stolonifera*). The banks supported coarse neutral grassland.
- 5.2.7.2. **Pond 2** was dry during the survey and contained large tussocks of soft rush along with creeping bent, occasional floating sweet-grass and tufted hair-grass (*Deschampsia cespitosa*) and some creeping buttercup and marsh foxtail (*Alopecurus geniculatus*).



Photograph 9—Pond 1 (left) and Pond 2

- 5.2.7.3. Both of these ponds will be removed when the site is restored.

5.2.8. Standing Water and Wet Ditch (G1.1)

- 5.2.8.1. To the immediate west of the quarry workings are two small ponds (**Ponds 3 and 4 at TN9**) previously used for sediment control. These are no longer in use and dense goat and crack willow scrub has developed on the banks and in the shallow water margins creating very shaded conditions with no aquatic vegetation visible.
- 5.2.8.2. The banks of the ponds are also heavily shaded and support little or no vegetation with just some shade tolerant species present such as Yorkshire fog, ivy and ground ivy (*Glechoma hederacea*) and areas of bramble scrub around the margins of the scrub. Both of these ponds will be removed during future quarrying operations.



Photograph 10—Pond 3 showing heavily shaded conditions and lack of aquatic vegetation

- 5.2.8.3. A wet ditch runs along the northern boundary of the plantation woodland at **TN12** and alongside hedgerow **H3**. The bankside vegetation comprised coarse grasses including false oat-grass, common couch Yorkshire fog and cock's-foot. There were occasional tussocks of soft rush the ditch along with frequent creeping bent and creeping buttercup and occasional tufted hair-grass.



Photograph 11—Wet ditch adjacent to hedgerow **H2**

- 5.2.8.4. **Pond 5** in the restored land supported a varied emergent and submerged aquatic flora including stands of bulrush, soft rush, great willowherb (*Epilobium hirsutum*) and greater pond sedge (*Carex riparia*) along with some large submerged beds of water starwort (*Callitriche agg.*).
- 5.2.8.5. Other marginal species included creeping bent, creeping buttercup, silverweed and redshank (*Persicaria maculosa*), along with much less frequent water figwort (*Scrophularia auriculata*) and celery-leaved buttercup (*Ranunculus sceleratus*).



Photograph 12—Pond 5

5.2.9. Quarry (J2.1)

- 5.2.9.1. The main quarry comprises extensive areas of bare and heavily disturbed ground with a small quarry face along the south western edge and an area of open water in the base. This is pumped dry on a regular basis when quarrying operations are on-going and supports no aquatic vegetation.
- 5.2.9.2. Areas of bare ground that have not been recently disturbed have some developing vegetation comprising annual meadow grass, common bent, red fescue, soft brome (*Bromus hordeaceus*) and perennial ryegrass along with occasional knotgrass, pineapple weed, fat hen (*Chenopodium album*), common mouse-ear, weld, groundsel (*Senecio vulgaris*), white clover and common nettle.



Photograph 13—Quarry void

5.2.10. Hedgerows (J2.2.2 and J2.3.2)

- 5.2.10.1. A hawthorn dominated hedgerow (**H1**) runs along the northern site boundary between the site and the adjacent Hob Royd Shrogg and Miry Greaves Shrogg LWS. Other species included occasional elder (*Sambucus nigra*) and blackthorn. The base of the hedge contained

stands of common nettle and bramble underscrub along with coarse grasses including cock's-foot, Yorkshire fog and false oat-grass. This hedgerow lies on the site boundary and would be unaffected by on-going quarrying or restoration works.



Photograph 14—hedgerow H2 in background and improved grassland in foreground

- 5.2.10.2. Hedgerow **H2** is a mature hedgerow of hawthorn with some semi-mature ash, pedunculate oak and single sycamore standards. The base of the hedgerow is grazed and comprised improved pasture with perennial ryegrass, common bent, red fescue and white clover with some bare areas around the roost where livestock have trampled the vegetation. The majority of this hedgerow would be removed to accommodate future quarrying operations.
- 5.2.10.3. Hedgerow **H3** is very similar in character to **H2** and runs along the eastern site boundary and is a mature, unmanaged hawthorn hedgerow with blackthorn and occasional elder along with some pedunculate oak and ash standards. The base of the hedgerow is grazed and comprised improved pasture with perennial ryegrass, common bent, red fescue and white clover with some bare areas around the roost where livestock have trampled the vegetation. This hedgerow would not be affected by future quarrying operations.

5.2.11. Bare Ground (J4)

- 5.2.11.1. The main access to the site is a purpose built road of concrete at its eastern end grading into a hardcore surfaced track within the site with french drains on the margins.

5.3. Protected Species

5.3.1. Bats

Buildings

- 5.3.1.1. The site does not contain any buildings or other structure of potential value to roosting bats.

Trees

- 5.3.1.2. The site does not contain any large trees with potential value to roosting bats.
- 5.3.1.3. The plantation woodland areas are all small and young trees with no PRF's
- 5.3.1.4. The largest trees are in hedgerow **H2** (see photograph 12 above) and comprise a line of semi-mature ash, oak and sycamore. These were inspected from the ground and no obvious PRF's were observed. Whilst the trees are quite large that have been cut back in previous years meaning that have large lower trunks but the upper structure is younger and contains very little dead wood or features of potential value to roosting bats. These trees were assessed to be of negligible or very low value to roosting bats.

5.3.2. Badgers

- 5.3.2.1. No badger setts were recorded within or immediately adjacent to site.
- 5.3.2.2. No evidence of badger foraging activity was recorded during the field survey.

5.3.3. Otters

- 5.3.3.1. The site does not contain any habitats of potential value to otter (*Lutra lutra*), no evidence of otter activity was recorded during the field survey.

5.3.4. Water Vole

- 5.3.4.1. The site does not contain any habitats of potential value to water vole (*Arvicola amphibius*), no evidence of water vole activity was recorded during the field survey.
- 5.3.4.2. The two smaller settling ponds (**Ponds 1 and 2**) are subject to significantly fluctuating water levels during periods of pumping water from the quarry workings and pond 2 was dry during the survey, whilst pond one contained shallow muddy water. The larger ponds (**TN9**) contained permanent water but were heavily shaded by adjacent willows and had no marginal or emergent aquatic vegetation.

- 5.3.4.3. **Pond 5** contained abundant marginal and submerged aquatic vegetation suitable for water vole but no evidence of their presence was recorded during the field survey despite all sections of the bank being examined.
- 5.3.4.4. The ditch adjacent to hedgerow **H2** was also examined for evidence of water vole and none was recorded.

5.3.5. Wild Birds

- 5.3.5.1. The survey was completed in January, outside of the bird breeding season. However the majority of the bird activity was recorded from the areas of plantation woodlands and included blue tit (*Cyanistes caeruleus*), great tit (*Parus major*), wren (*Troglodytes troglodytes*), robin (*Erithacus rubecula*), chaffinch (*Fringilla coelebs*), blackbird (*Turdus merula*) and wood pigeon (*Columba palumbus*).
- 5.3.5.2. Several rooks (*Corvus frugilegus*) were recorded feeding in the improved grassland fields to the west of the existing quarry.
- 5.3.5.3. Some bird activity was also recorded from the boundary hedgerow **H1** and also the hedgerow with trees (**H2**), that latter contained singing robin and chaffinch.

5.3.6. Amphibians

- 5.3.6.1. The site does not contain any ponds suitable for breeding amphibians including great crested newts (*Triturus cristatus*) with the exception of **pond 5** in the restored land to the south of the site. No amphibians were recorded during the field survey.
- 5.3.6.2. The two settling ponds (**Ponds 1 and at TN5**) have widely fluctuating water levels and are dry for large parts the year. **Pond 2** was dry during the field survey despite recent heavy rainfall prior to the survey and **pond 1** contained shallow silty water. The HSI Score for these ponds indicates that they are unlikely to support breeding great crested newts (GCN).
- 5.3.6.3. The two ponds at **TN9 (Ponds 3 and 4)** are heavily shaded by adjacent willows and did not contain any marginal or submerged aquatic vegetation and appeared to support limited populations of aquatic invertebrates. The HSI scores for these ponds indicates that they are unlikely to support breeding GCN.
- 5.3.6.4. The larger pond (**Pond 5**) on the restored land (**TN16**) supports abundant marginal and submerged aquatic vegetation, but also supports a large population of sticklebacks and the low HSI reflects this. Some of the margins have stone edges which provide potential refuges for sheltering

amphibians. An examination of some these places did not record any amphibians.



Photograph 15 and 16—Pond 5 showing well developed aquatic vegetation

5.3.6.5. Table 7 below summarise the HSI assessments for each pond

Table 7—Pond HSI Scores Summary

Pond	HSI Score	Description	Potential for supporting GCN
1	0.3	Small settling pond with swamp vegetation of bulrush and soft rush contained muddy water on survey visit	Poor
2	0.3	Small dry settling pond with dense growth of soft rush and terrestrial grasses	Poor
3	0.4	Small pond with water heavily shaded by adjacent willows and no marginal or aquatic vegetation and limited aquatic invertebrates	Poor
4	0.4	Small pond with water heavily shaded by adjacent willows and no marginal or aquatic vegetation and limited aquatic invertebrates	Poor
5	0.53	Large wildlife pond created on restored quarry workings with good marginal and aquatic vegetation but support a large population of sticklebacks.	Below Average

5.3.6.6. Examination of OS maps and satellite imagery indicates that there are no other ponds located within 500m of the site boundary that are connected to the site by areas of suitable terrestrial habitat.

5.3.7. Reptiles

5.3.7.1. The site contains some piles of quarry waste and stone which provide potential refugia for reptile and the wetland and grassland habitats at TN15 and TN16 are of potential value to foraging reptiles.

5.4. Non-Native Invasive

5.4.1. No non-native invasive species were recorded during the field survey

6. PLANNING POLICY CONTEXT

6.1. National Planning Policy

6.1.1. National Planning Policy Framework 2019

- 6.1.1.1. The National Planning Policy Framework (NPPF 2019) sets out the Government's planning policies for England and how these are expected to be applied. The NPPF sets out the Government's national principles and policies for England on the protection of biodiversity and geological conservation through the planning system.
- 6.1.1.2. At the heart of the NPPF is a clear ***"presumption in favour of sustainable development, which should be seen as a golden thread running through both plan-making and decision-making"*** (Para 11).
- 6.1.1.3. The UK's Sustainable Development Strategy "Securing the Future" sets out 5 guiding principles of sustainable development:
- living within the planet's environmental limits;
 - ensuring a strong, healthy and just society;
 - achieving a sustainable economy;
 - promoting good governance; and
 - using sound science responsibly.
- 6.1.1.4. Section 15 of the NPPF sets out how the planning system should contribute to sustainable development by conserving and enhancing the natural environment through:
- protecting and enhancing valued landscapes, geological conservation interests and soils;
 - recognising the intrinsic character and beauty of the countryside and the wider benefits from natural capital and ecosystem services;
 - maintaining the character of the undeveloped coast;
 - minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;
 - preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability; and

- remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.

6.1.1.5. To protect and enhance biodiversity and geodiversity, plans should:

- Identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation; and
- Promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.

6.1.1.6. Paragraph 175 states that when determining planning applications, local planning authorities should aim to conserve and enhance biodiversity by applying the following principles:

- if significant harm resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;
- proposed development on land within or outside a Site of Special Scientific Interest likely to have an adverse effect on a Site of Special Scientific Interest (either individually or in combination with other developments) should not normally be permitted. Where an adverse effect on the site's notified special interest features is likely, an exception should only be made where the benefits of the development, at this site, clearly outweigh both the impacts that it is likely to have on the features of the site that make it of special scientific interest and any broader impacts on the national network of Sites of Special Scientific Interest;
- development proposals where the primary objective is to conserve or enhance biodiversity should be permitted;
- opportunities to incorporate biodiversity in and around developments should be encouraged;
- planning permission should be refused for development resulting in the loss or deterioration of irreplaceable habitats, including ancient woodland and the loss of aged or veteran trees found outside ancient

woodland, unless the need for, and benefits of, the development in that location clearly outweigh the loss; and

- the following wildlife sites should be given the same protection as European sites:
 - » potential Special Protection Areas and possible Special Areas of Conservation;
 - » listed or proposed Ramsar sites; and
 - » sites identified, or required, as compensatory measures for adverse effects on European sites, potential Special Protection Areas, possible Special Areas of Conservation, and listed or proposed Ramsar sites

6.1.1.7. Additionally paragraph 177 notes that the “*presumption in favour of sustainable development does not apply where development requiring appropriate assessment under the Birds or Habitats Directives is being considered, planned or determined*”.

6.1.1.8. Annex 1 of the NPPF sets out the detail of implementation.

6.1.1.9. *ODPM Circular 06/2005* (Government Circular: Biodiversity and Geological Conservation—Statutory Obligations and their Impact within the Planning System) continues to provide administrative guidance on the application of the law relating to planning and nature conservation as it applies in England. It complements and supports the expression of national planning guidance set out in NPPF.

7. EVALUATION AND RECOMMENDATIONS

7.1. Overall Approach to Assessment

7.1.1. The overall approach to assessment adopted by the study team is based upon the guidelines for Guidelines for Ecological Impact Assessment in the UK and Ireland—Terrestrial, Freshwater, Marine and Coastal published by the Chartered Institute of Ecological and Environmental (CIEEM 2018) and can be summarised as below:

1. To identify the likely zone of influence (study area) arising from the whole lifespan of the project;
2. To identify and value the features of nature conservation interest within the ecological study area in a systematic way by establishing levels of interest for ecological features measured against definable criteria and is used to select the species, communities, habitats or sites that require further detailed examination during the process of ecological impact assessment.
3. To identify the biophysical changes attributable to the project that are likely to affect valued ecological features and resources;
4. To assess whether these biophysical changes are likely to give rise to a significant ecological impact, defined as an impact on the integrity of a defined site or ecosystem and/or the conservation status of habitats or species within a given geographical area, including cumulative and in-combination impacts;
5. To consider appropriate refinement of the project to avoid or reduce identified negative impacts and incorporate mitigation measures and/or compensation measures for any residual significant negative impacts and ecological enhancement measures to improve the wider environment;
6. To undertake an assessment of the ecological impacts of the refined project and definition of the significance of these impacts, including cumulative and in-combination impacts;
7. To provide advice on the consequences for decision making of the significant ecological impacts, based on the value of the resource, feature or function; and

8. Where appropriate to make recommendations for monitoring the implementation and success of mitigation and compensation measures and ecological outcomes, including feedback in relation to predicted outcomes.

7.2. Determining Value

- 7.2.1. The CIEEM guidelines advocates an approach to the valuation of ecological features using a geographical framework (full details in Appendix 2) based upon the following:
 - International;
 - National; (i.e. England/Northern Ireland/Scotland/Wales)
 - Regional;
 - County/Metropolitan
 - District/Unitary Authority/City or Borough
 - Local/Parish
 - Within zone of influence only
- 7.2.2. The thorough evaluation of the ecological importance of the features of a site is essential in order to assess the significance of the ecological effects of the development proposals.
- 7.2.3. The evaluation criteria are given in detail in Appendix 2. Their aim is to consider the habitats, communities and species present on site in relation to the following:
 1. The legislative framework (e.g. the Wildlife and Countryside Act 1981 and the EC Directive on the Conservation of Habitats and Wild Fauna and Flora (92/43/EEC) for the presence of protected species and habitats).
 2. Nature conservation designations, including national site designations (Sites of Special Scientific Interest, National Nature Reserves etc), local designations (Sites of Importance for Nature Conservation, Local Nature Reserves, County Wildlife Sites etc).
 3. Accepted criteria for species rarity and declining populations, and rarity of habitat types or communities, including species and habitats identified in the British Red Data Books, national biodiversity action plan, and species and habitats identified in regional or local biodiversity action plans where available.
 4. Accepted criteria for overall site evaluation (including rarity, diversity, naturalness, historical factors and issues relating to landscape ecology).

7.3. Development Impacts

- 7.3.1. The development as currently permitted would result in the loss of the following habitats as a result of quarrying operations and site restoration:
- Dense willow scrub (**TN9**)
 - Semi-improved neutral grassland (**TN5 and TN10**)
 - Improved agricultural grassland (**TN7 and TN11**)
 - **Ponds 1, 2, 3 and 4**
 - The majority (approximately 80%) of hedgerow **H2**
- 7.3.2. The remaining habitats within the site including the restored woodland, grassland and wetland habitats would be retained and protected during the final quarrying and site restoration operations.
- 7.3.3. The application for an extension time for quarrying activities does not seek to extend the area of the quarry and would not lead to increased habitat losses beyond those covered by the extant planning permissions.
- 7.3.4. However it does provide an opportunity to review and improve the previously agreed site restoration plans and to develop a new scheme which seeks to maximise the ecological value of the restored site by including the following:
- Native mixed species woodland planting
 - Native mixed species scrub planting
 - Species rich grassland
 - Pond and wetland habitats
- 7.3.5. Together these measures will help to create larger areas of semi-natural habitat than currently exist within the site and previously approved restoration and lead to an overall net biodiversity gain.

7.4. Nature Conservation Designations

7.4.1. Statutory Designations

- 7.4.1.1. The site is not covered by any statutory or non-statutory nature conservation designations and there are no sites covered by statutory designations within 5km of the site boundary
- 7.4.1.2. No significant off site impacts are predicted and no impacts upon statutorily designated sites are expected given the distance between the site and the nearest point on the designated site boundary and therefore **no** further survey and assessment work are recommended.

7.4.2. Non-Statutory Designations

Site Designations

- 7.4.2.1. There are 6 LWS within 2km of the site boundary with the nearest being Hob Royd Shrogg and Miry Greaves Shrogg LWS which lies immediately adjacent to the northern site boundary and close to High Bridge Wood LWS which is approximately 250m away from the site boundary.
- 7.4.2.2. Noise and dust control and monitoring measures are in place as part of the planning conditions associated with the extant planning permission to ensure that these do not impact upon nearby neighbouring properties and habitats. These measures have been efficient in controlling noise and dust emissions at this site and no significant off-site impacts have been recorded.
- 7.4.2.3. The four remaining LWS are all located more than 1.2km away from the site boundary and given that no significant off-site effects are predicted it is not expected that these sites would be impacted by the quarry workings.
- 7.4.2.4. None of these designated sites would be directly affected by the development proposals and no significant off-site impacts are predicted that would impact upon them due to the distanced between them and the site boundary and the nature of the development proposed.
- 7.4.2.5. **No** impacts upon designated sites are predicted and **no** further survey and assessment work are recommended.

Landscape Designations

- 7.4.2.6. The development would not impact directly upon habitats contained within the KWHN. The areas of plantation woodland, grassland and wetland included within the KWHN and within the site boundary would be retained and protected during the final quarrying stages and then incorporated into the final restoration. The final restored landscape will create significant new areas of important new habitats to strengthen the KWHN in this area and improve links between the previously restored land and the nearby Hob Royd Shrogg and Miry Greaves Shrogg LWS.
- 7.4.2.7. No significant off sites impacts are predicted, the closest habitats within the KWHN are located within the application site boundary they comprise previous restored habitats and the final restoration will add to the value and integrity of the KWHN in the vicinity of the application site. **No** further assessment is recommended

7.5. Habitats

- 7.5.1. The new application for the extension of time for quarrying operations does not seek to extend the area of the quarry and would not lead to any increased habitat losses beyond those covered by the extant planning permissions and would therefore not lead any new impacts arising from habitat losses.
- 7.5.2. The development as currently permitted would result in the loss of the following habitats as a result of quarrying operations and site restoration:
- Dense willow scrub (**TN9**)
 - Semi-improved neutral grassland (**TN5 and TN10**)
 - Improved agricultural grassland (**TN7 and TN11**)
 - **Ponds 1, 2, 3 and 4**
 - The majority (approximately 80%) of hedgerow **H2**
- 7.5.3. The areas of restored habitat including plantation woodland, moderately species rich grassland and **pond 5** would be protected and retained during the final quarry phases and no impacts or losses are predicted.
- 7.5.4. The areas of improved agricultural grassland, species poor semi-improved grasslands, willow scrub and ponds support a very limited range of common and widespread species as such have no intrinsic botanical value and the loss of the habitats would only be felt within zone of influence of the development.
- 7.5.5. The application for an extension time for quarrying activities does not seek to extend the area of the quarry and would not lead to increased habitat losses beyond those covered by the extant planning permissions.
- 7.5.6. However it does provide an opportunity to review and improve the previously agreed site restoration plans and to develop a new scheme which seeks to maximise the ecological value of the restored site by including the following:
- Native mixed species woodland planting
 - Native mixed species scrub planting
 - Species rich grassland
 - Pond and wetland habitats
- 7.5.7. Together these measures will help to create larger areas of semi-natural habitat than currently exist within the site and previously approved restoration and lead to an overall net biodiversity gain.
- 7.5.8. **No** significant botanical effects are predicted as a result of the quarry operations and the proposed site restoration will create large areas of new habitat of higher botanical value in the future.

- 7.5.9. **No** further survey or assessment work is recommended with regard to the botanical interest of the site.

7.6. Protected Species

7.6.1. Bats

- 7.6.1.1. All UK species of bat are afforded full protection under Section 9 of the Wildlife and Countryside Act 1981 (as amended) through their inclusion on Schedule 5 of the Act and also receive full protection as European Protected Species under Section 41 of The Conservation of Habitats and Species Regulations 2017 through their inclusion on Schedule 2.

Buildings

- 7.6.1.2. The site does not contain any buildings of potential value to roosting bats
- 7.6.1.3. **No** significant impacts upon roosting bats in buildings are predicted and **no** further survey and assessment work is recommended.

Trees

- 7.6.1.4. The site does not contain any trees of potential value to roosting bats
- 7.6.1.5. **No** significant impacts upon roosting bats in trees are predicted and **no** further survey and assessment work is recommended.

Habitats

- 7.6.1.6. The habitats with the site that are assessed to be of potential value for foraging and commuting bats are the areas of plantation woodland and the grassland sheltered habitats around pond 5 along with hedgerows **H1**, **H2** and **H3**. That habitats associated with Pond 5 are the only ones included in the alert zone that would be of potential value to foraging and commuting bats. The other areas associated with the existing quarry void are only included in the bat alert zone because they are within 200m of Hob Royd Shrogg and Miry Greaves Shrogg LWS and in themselves have very little value for foraging and commuting bats.
- 7.6.1.7. Hedgerow **H1** lies between the site and Hob Royd Shrogg and Miry Greaves Shrogg LWS and provides a commuting and feeding corridor along the woodland edge and links to hedgerows **H2** and **H3**.
- 7.6.1.8. Hedgerow **H2** is permitted to be removed under the extant planning permission and is perhaps the least important hedgerow of the three because it terminates at an area of scrub adjacent to the existing quarry void. The scrub area contains two former settling ponds but the willow scrub canopy is very dense and confused, reducing the value to this area for foraging bats. Hedgerow **H3** however links directly to the large plantation woodland (**TN12**) north of the **pond 5** and provides a link

between these potentially valuable foraging habitats and those associated with Hob Royd Shrogg and Miry Greaves Shrogg LWS and would be retained and protected during the final phases of quarrying operations.

- 7.6.1.9. The areas of coarse neutral grassland are more open and therefore potentially of less value to feeding and commuting habitats
- 7.6.1.10. **No** significant impacts upon commuting or feeding bats are predicted and **no** further survey and assessment work is recommended.

7.6.2. Badgers

- 7.6.2.1. Badgers are protected under the Protection of Badgers Act 1992.
- 7.6.2.2. No badger setts were recorded within or immediately adjacent to site and no evidence of badger foraging activity was recorded during the field survey.
- 7.6.2.3. **No** impacts upon badgers are predicted and **no** further survey or assessment work is recommended

7.6.3. Otters

- 7.6.3.1. Otters are afforded full protection under Section 9 of the Wildlife and Countryside Act 1981 (as amended) through their inclusion on Schedule 5 of the Act and also receive full protection as European Protected Species under Section 41 of The Conservation of Habitats and Species Regulations 2017 through their inclusion on Schedule 2.
- 7.6.3.2. The site **does not** contain any habitats of potential value to otters, **no** evidence of otter activity was recorded during the field survey and the desktop study did **not** provide any records for this species within 2km of the site boundary. **No** impacts upon otter are predicted and **no** further survey or assessment work for otters is recommended.

7.6.4. Water Vole

- 7.6.4.1. Water vole is afforded full protection under Section 9 of the Wildlife and Countryside Act 1981 (as amended) through their inclusion on Schedule 5 of the Act.
- 7.6.4.2. The site **does not** contain any habitats of potential value to water vole, **no** evidence of water vole activity was recorded during the field survey and the desktop study did **not** provide any records for this species within 2km of the site boundary. **No** impacts upon water vole are predicted and **no** further survey or assessment work for water vole is recommended.

7.6.5. Wild Birds

- 7.6.5.1. With certain exceptions, all wild birds, their eggs, nests and young are protected under the *Wildlife and Countryside Act 1981* (as amended).
- 7.6.5.2. Most bird activity recorded during the survey was associated with the boundary hedgerows **H1**, **H2** and **H3** and also with the areas of mixed plantation woodland, where the highest levels of activity were recorded, and these are areas likely to be of value to breeding birds. Hedgerows **H1** and **H3** would be retained and protected during the final phases of the quarrying operation whilst approximately 80% of hedgerow **H2** would be lost.
- 7.6.5.3. The areas of improved grassland are unlikely to be of significant value to breeding birds and their loss is not likely to be significant to breeding birds beyond the immediate zone of influence of the scheme.
- 7.6.5.4. The habitat losses arising from the final quarrying phases are already permitted and are unlikely to have effects noticeable beyond the immediate zone of influence of the quarry. The new application would not increase habitat losses beyond those already permitted.
- 7.6.5.5. In any case, potential impacts upon nesting birds can be prevented during construction by ensuring that vegetation removal is programmed to occur outside of the bird nesting season (March to September inclusive) or where this is not possible under the supervision of a suitably qualified and experienced ecologist as set out in the recommendations below.
- 7.6.5.6. **No** significant impacts upon nesting birds are predicted and **no** further ornithological survey work is recommended.

7.6.6. Amphibians

- 7.6.6.1. All UK native amphibians are afforded partial or full protection under Section 9 of the *Wildlife and Countryside Act 1981* (as amended) through their inclusion on Schedule 5 of the Act and Great Crested newts (*Triturus cristatus*) are provided the highest level of protection. Great crested newts (GCN) are fully protected from capture, injury, killing and damage or destruction of their breeding sites or resting places under The Conservation of Habitats and Species (as amended) Regulations 2017.
- 7.6.6.2. The site contains a number of ponds but only **pond 5** was considered to be of potential value to breeding amphibians. The other ponds were too temporary or heavily shaded by trees to be of significant value to amphibians and with regard to GCN's scored very poorly in the HSI Assessment.

- 7.6.6.3. The HSI score for **pond 5** strongly suggests that this pond would not be suitable for breeding GCN's because of the population of sticklebacks that it supports.
- 7.6.6.4. The desktop study did identify an old record for GCN's at Pingle Nook Farm dating back to 2000 and the current status of this species at this location is unknown.
- 7.6.6.5. The application site is located approximately 545m north of Pingle Nook Farm from which is separated by the busy Wakefield Road. This is beyond the distance that is considered necessary for survey under the GCN Mitigation Guidelines (NE 2001), where ponds within 500m of the site would require survey, if they are connected to the site by suitable terrestrial habitat.
- 7.6.6.6. In this regard there are extensive areas of optimal terrestrial habitat for foraging GCN including areas of neutral grassland, woodland and scrub between the site and the pond at Pingle Nook Farm and Wakefield Road is likely to be a significant barrier to movement of GCN'S from Pingle Nook Farm into the site.
- 7.6.6.7. Whilst GCN are known to move considerable distances from their breeding ponds, the vast majority of GCN will remain much closer (EN 2001). The quality of terrestrial habitat near to breeding ponds is an important factor in determining how far they are likely to travel. Where good quality terrestrial habitat is found close to their breeding ponds, GCN are unlikely to travel large distances, whereas poor quality habitat close to the ponds may force them to travel greater distances to find suitable terrestrial foraging habitat.
- 7.6.6.8. This analysis is to a large degree supported by the conclusions of English Nature (EN) Research Note 576 (2004), an assessment of the efficiency of capture techniques and the value of different habitats for the great crested newt *Triturus cristatus*, which notes that
- "The most comprehensive mitigation, in relation to avoiding disturbance, killing or injury is appropriate within 50m of a breeding pond. It will also almost always be necessary to actively capture newts 50-100m away. However, at distances greater than 100m, there should be careful consideration as to whether attempts to capture newts are necessary or the most effective option to avoid incidental mortality. At distances greater than 200-250m, capture operations will hardly ever be appropriate."*

- 7.6.6.9. The research report also notes

Where there were no obvious features to 'target' with fencing, capture success along fences declined sharply with distance from ponds, and captures within the 50-100m zone were generally inefficient. Captures on fences (and by other methods) at distances between 100m and 200-250m from breeding ponds tended to be so low as to raise serious doubts about the efficacy of this as an approach, although a small number of projects did report captures on significant linear features at distances of approximately 150-200m from ponds.

- 7.6.6.10. Given the distance between the site and the nearest known GCN population at Pingle Nook Farm, the high quality of habitats in the immediate area around Pingle Nook Farm, the barrier effect of Wakefield Road and the HSI assessment that **Pond 5** is of below average value for GCN's it is assessed that GCN'S are highly unlikely to be present with the site.
- 7.6.6.11. Other amphibians that may be breeding in **pond 5** are located at least 200m away from the nearest future quarrying operations and close to 300m from the existing quarry void. Between **pond 5** and the current and proposed quarry phases are extensive areas of neutral grassland and plantation woodland which are both likely to provide good foraging habitat and encourage amphibians to remain in close proximity to **pond 5**.
- 7.6.6.12. **No** impacts upon amphibians or GCN's are predicted and **no** further survey and assessment work for amphibians is recommended

7.7. Recommendations

7.7.1. Bats

- 7.7.1.1. The trees in Hedgerow H2 were assessed for their potential to support roosting bats and were of either negligible or low value. However if these are not removed within 2 years of the date of this report it is recommended that they be re-surveyed before removal.

7.7.2. Breeding Birds

- 7.7.2.1. Whilst only limited bird activity was recorded from the hedgerow and woodland plantation within the site and along the site boundary these areas are likely to be used by breeding birds during the bird breeding season (March to September inclusive). Given the protection afforded to wild birds and their nests the following precautionary measures are recommended with regard to the removal of hedgerow **H2** and other areas of scrub with the application site:

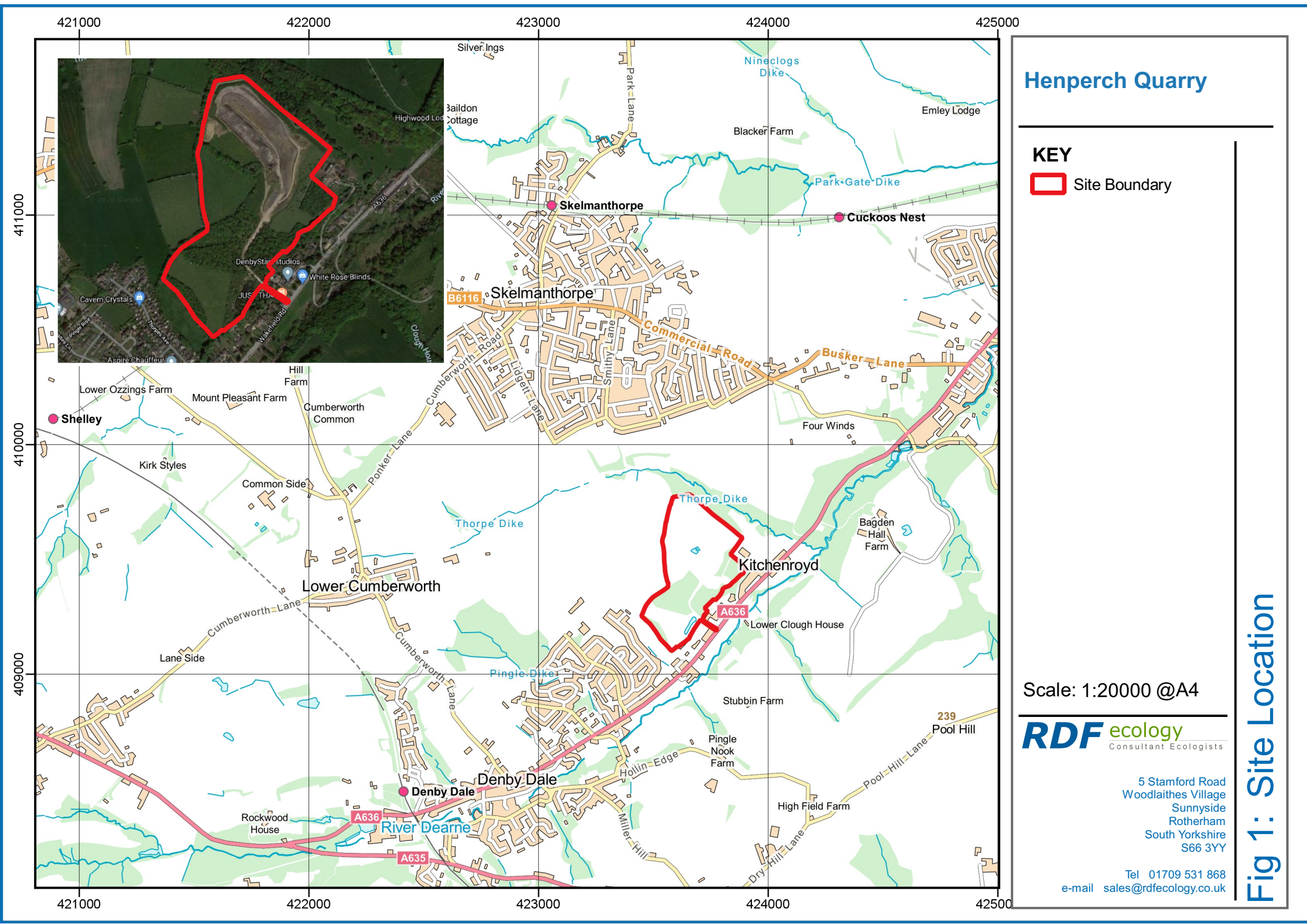
- That removal of trees, shrubs and surface vegetation should be completed outside of the bird breeding season (March to September inclusive). Where this is not possible a suitably qualified and experienced ecologist should complete survey of the site immediately prior to completion of the proposed works to search for nesting birds and to advise on exclusion zones or timing of works if nesting birds are recorded.

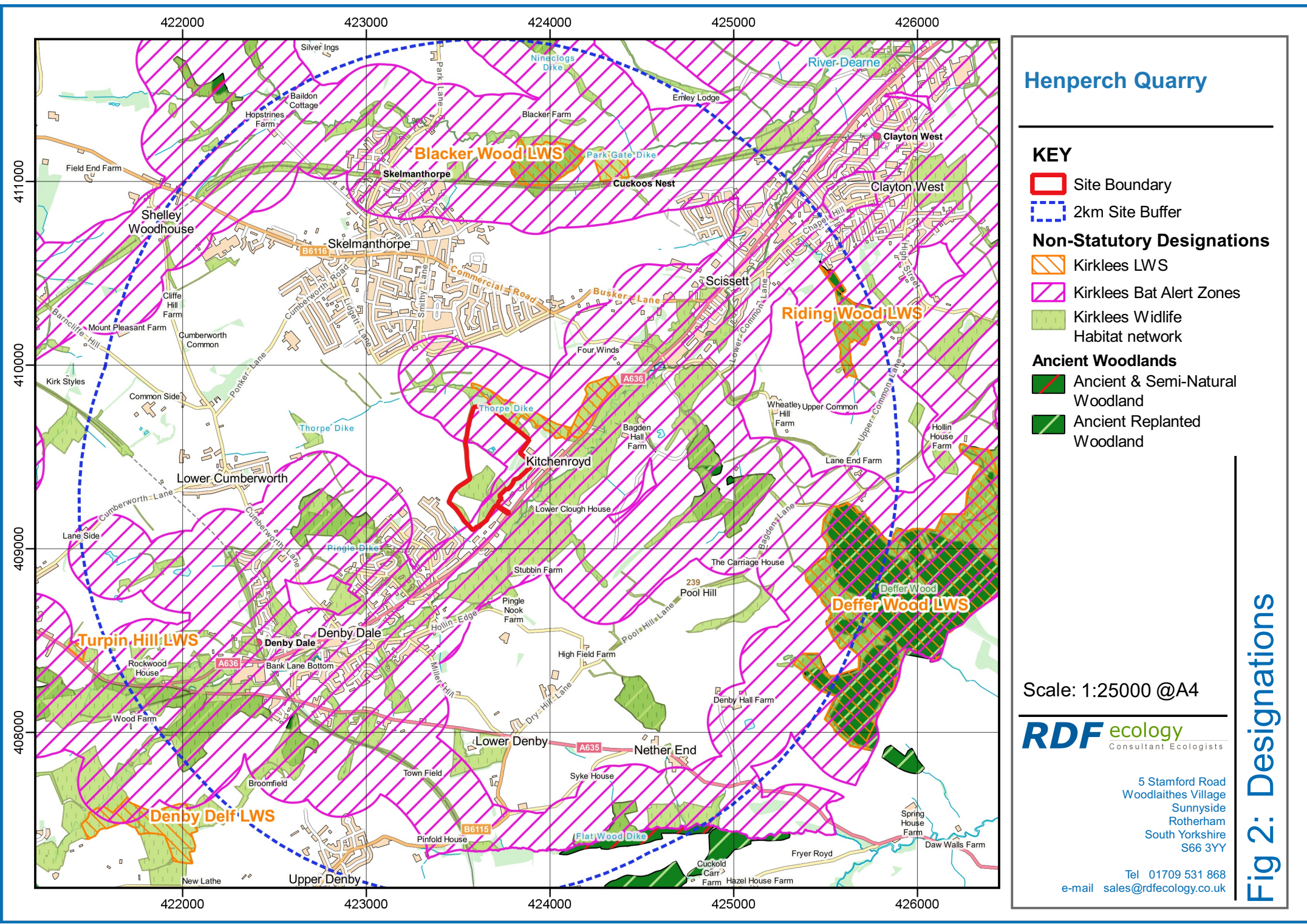
8. FIGURES

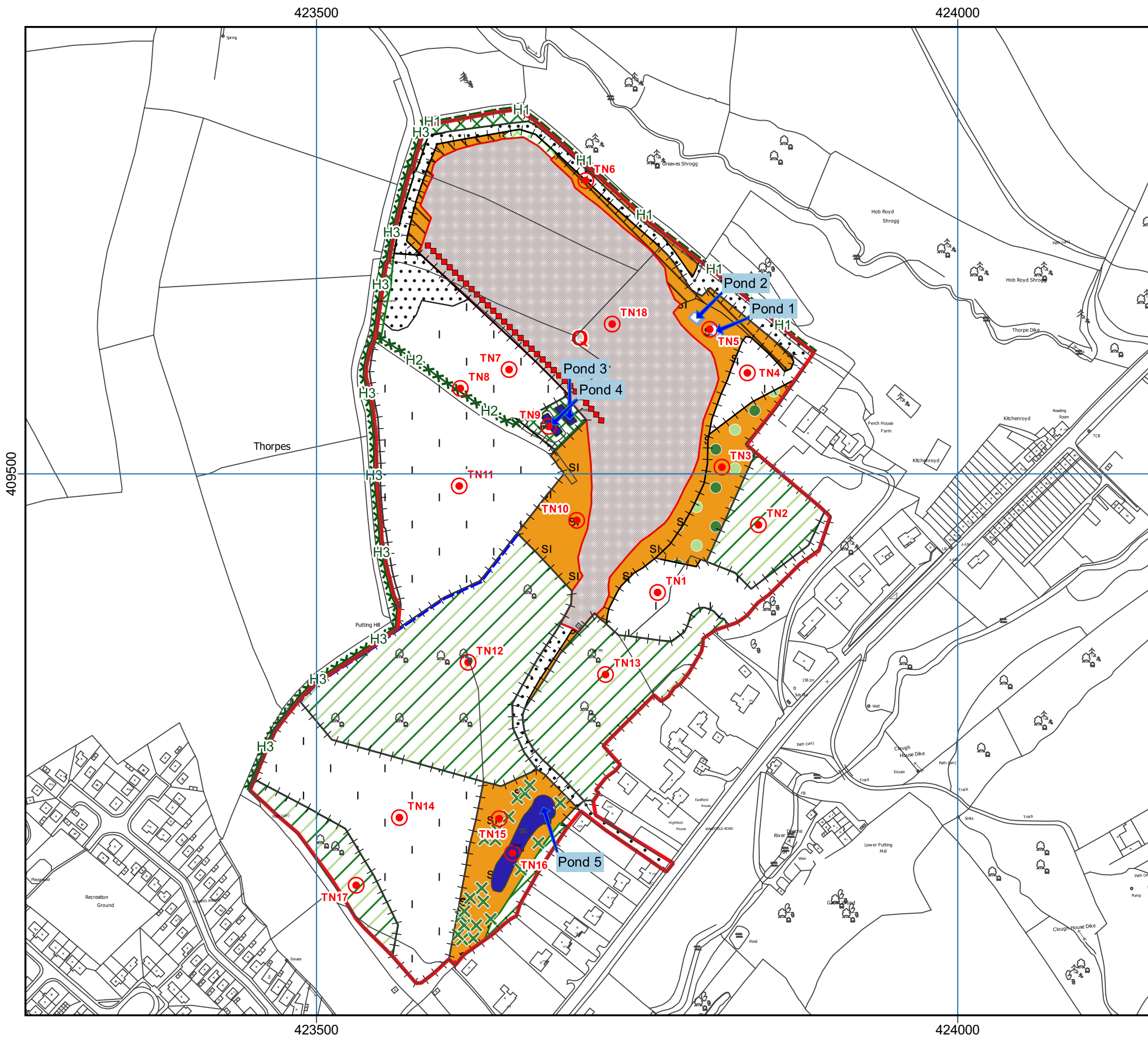
Figure 1—Site Location

Figure 2—Nature Conservation Designations

Figure 3—Phase I Habitats







Henperch Quarry

KEY

 Site Boundary

Phase 1 Habitats

 Broad-leaved woodland plantation

 Mixed plantation woodland

 Mixed plantation woodland and neutral grassland

 Dense scrub

 Dense bramble scrub

 Semi-improved neutral grassland

 Improved grassland

 Tall ruderal and semi-improved neutral grassland mosaic

 Inundation vegetation

 Standing water

 Quarry

 Bare ground

 Species poor hedgerow with trees

 Defunct species poor hedgerow

 Dry ditch

 Quarry edge

 Fence

 Scattered scrub

 Target Notes

Scale: 1:3000 @A3

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Fig 3: Phase 1 Habitats

9. REFERENCES

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10. APPENDICES

10.1. Appendix 1—List of Species

English Name	Scientific Name	Woodland	Scrub and Hedgerows	Semi-improved Grassland	Improved Grassland	Ruderal Vegetation	Standing Water and Inundation Vegetation	Quarry and Bare Ground
Field Maple	<i>Acer campestre</i>	R	R					
Sycamore	<i>Acer pseudoplatanus</i>	O-LF	O					
Yarrow	<i>Achillea millefolium</i>		O	O-LF	R	O		
Common Bent	<i>Agrostis capillaris</i>	O-F	F	F-LA	F	O-LF		O
Creeping Bent	<i>Agrostis stolonifera</i>						F-LA	R
Garlic Mustard	<i>Alliaria petiolata</i>	O	O					
Alder	<i>Alnus glutinosa</i>	F						
Marsh Foxtail	<i>Alopecurus geniculatus</i>						R	
Sweet Vernal-grass	<i>Anthoxanthum odoratum</i>	O	O	O-LF				
Cow Parsley	<i>Anthriscus sylvestris</i>	O-LF	O-LF			O		
False Oat Grass	<i>Arrhenatherum elatius</i>	O	O	O-LF		F-LA		
Mugwort	<i>Artemisia vulgaris</i>		O			O		
Silver Birch	<i>Betula pendula</i>	F-A	R			R		
Soft-brome	<i>Bromus hordeaceus</i>					O		O
Water Starwort agg.	<i>Callitriche</i> agg.						LF	
Hedge Bindweed	<i>Calystegia sepium</i>		O			O		
Wavy Bitter-cress	<i>Cardamine flexuosa</i>					O	O	R
Greater Pond-sedge	<i>Carex riparia</i>						LF	
Common Knapweed	<i>Centaurea nigra</i>			O-LF				
Common Mouse-ear	<i>Cerastium fontanum</i>			F-LA	O	O		O
Rosebay Willowherb	<i>Chamerion angustifolium</i>			O		LF		
Fat-hen	<i>Chenopodium album</i>					O		O
Creeping Thistle	<i>Cirsium arvense</i>		O	O-LF		O-LA		
Spear Thistle	<i>Cirsium vulgare</i>			O		O		
Hazel	<i>Corylus avellana</i>	F-A	O					
Hawthorn	<i>Crataegus monogyna</i>	F	F					
Smooth Hawk's-beard	<i>Crepis capillaris</i>			O-LF				
Crested Dog's Tail	<i>Cynosurus cristatus</i>			O-LF				
Broom	<i>Cytisus scoparius</i>		O	O				
Cock's Foot	<i>Dactylis glomerata</i>	O-LF	O-LF	F-LA	O	O-LF	O	R
Tufted Hair Grass	<i>Deschampsia cespitosa</i>			LF			R	
Foxglove	<i>Digitalis purpurea</i>	O				O		
Wild Teasel	<i>Dipsacus fullonum</i>			O		O		
Broad Buckler-fern	<i>Dryopteris dilatata</i>	R						
Common Couch	<i>Elytrigia repens</i>	O	O	O		O-LF	R	
Great Willowherb	<i>Epilobium hirsutum</i>			R			LF	
Broad-leaved Willowherb	<i>Epilobium montanum</i>	R	R			R		

English Name	Scientific Name	Woodland	Scrub and Hedgerows	Semi-improved Grassland	Improved Grassland	Ruderal Vegetation	Standing Water and Inundation Vegetation	Quarry and Bare Ground
Red Fescue agg.	<i>Festuca rubra</i> agg.	O	O-LF	F-LA	O-LF	O		
Ash	<i>Fraxinus excelsior</i>	F	R					
Cleavers	<i>Galium aparine</i>	O-LF	O-LF	O		O		
Cut-leaved Cranesbill	<i>Geranium dissectum</i>			R				
Herb Robert	<i>Geranium robertianum</i>	O						
Wood Avens	<i>Geum urbanum</i>	R						
Ground Ivy	<i>Glechoma hederacea</i>	O						
Floating Sweet-grass	<i>Glyceria fluitans</i>						F	
Ivy	<i>Hedera helix</i>	O-LF	O					
Hogweed	<i>Heracleum sphondylium</i>		O	O		O		
Hawkweed	<i>Hieracium</i> agg.			R				
Yorkshire Fog	<i>Holcus lanatus</i>	F-LA	F-LA	F-LA	O	O-LF	F	
Creeping Soft-grass	<i>Holcus mollis</i>	R-O	R					
Perforate St. John's-wort	<i>Hypericum perforatum</i>			LF				
Cat's-ear	<i>Hypochaeris radicata</i>		O	O-LF	R			
Holly	<i>Ilex aquifolium</i>	O	O					
Soft Rush	<i>Juncus effusus</i>			O			F-A	
White Dead Nettle	<i>Lamium album</i>		O	O		O		
Red Dead-nettle	<i>Lamium purpureum</i>			O				
European Larch	<i>Larix decidua</i>	O-F						
Meadow Vetchling	<i>Lathyrus pratensis</i>			O-LF				
Oxeye Daisy	<i>Leucanthemum vulgare</i>			O				
Common Toadflax	<i>Linaria vulgaris</i>			R				
Perennial Ryegrass	<i>Lolium perenne</i>	O	F	F-LA	A-LD	F	O	O
Bird's-foot-trefoil	<i>Lotus corniculatus</i>			LF				
Pineapple Weed	<i>Matricaria discoidea</i>			R		R-O		O
Black Medick	<i>Medicago lupulina</i>			LF				
Field Forget-me-not	<i>Myosotis arvensis</i>							R
Common Poppy	<i>Papaver rhoeas</i>			R		R		R
Redshank	<i>Persicaria maculosa</i>						R	
Timothy Grass	<i>Phleum pratense</i>			O		O		
Scots Pine	<i>Pinus sylvestris</i>	F						
Ribwort Plantain	<i>Plantago lanceolata</i>	R	O	O-LF	O			
Greater Plantain	<i>Plantago major</i>		O	O	R-LF	O		
Annual Meadow-grass	<i>Poa annua</i>			O		O		O
Smooth Meadow-grass	<i>Poa pratensis</i>			O				
Rough Meadow-grass	<i>Poa trivialis</i>			O			R	
Knotgrass agg.	<i>Polygonum aviculare</i> agg.					O		O
Silverweed	<i>Potentilla anserina</i>						LF	
Wild Cherry	<i>Prunus avium</i>	F						
Blackthorn	<i>Prunus spinosa</i>	O	F					
Pedunculate Oak	<i>Quercus robur</i>	F	O					

English Name	Scientific Name	Woodland	Scrub and Hedgerows	Semi-improved Grassland	Improved Grassland	Ruderal Vegetation	Standing Water and Inundation Vegetation	Quarry and Bare Ground
Meadow Buttercup	<i>Ranunculus acris</i>		O	O-LF				
Creeping Buttercup	<i>Ranunculus repens</i>		O	O-LF	O	O	LF	
Celery-leaved Buttercup	<i>Ranunculus sceleratus</i>						VR	
Wild Mignonette	<i>Reseda lutea</i>			O		O-LF		O
Weld	<i>Reseda luteola</i>			O		O		O
Yellow Rattle	<i>Rhinanthus minor</i>			O-LF				
Dog Rose agg.	<i>Rosa canina</i> agg.	O	O			O		
Bramble agg.	<i>Rubus fruticosus</i> agg.	O-LA	O-LF	O		O-LA		
Common Sorrel	<i>Rumex acetosa</i>			O	R			
Sheep's Sorrel	<i>Rumex acetosella</i>			R				
Curly Dock	<i>Rumex crispus</i>			O		O		
Broad-leaved Dock	<i>Rumex obtusifolius</i>			O-LF		LF		
Procumbent Pearlwort	<i>Sagina procumbens</i>			R				
Goat Willow	<i>Salix caprea</i>	O	O					
Grey Willow	<i>Salix cinerea</i>		R					
Crack Willow	<i>Salix fragilis</i>	O	O					
Water Figwort	<i>Scrophularia auriculata</i>						VR	
Biting Stonecrop	<i>Sedum acre</i>			VR				
Ragwort	<i>Senecio jacobaea</i>		O	O-LF		O		
Groundsel	<i>Senecio vulgaris</i>			R		O-LF		O
Hedge Mustard	<i>Sisymbrium officinale</i>		O			O		
Prickly Sow Thistle	<i>Sonchus asper</i>					O		O
Rowan	<i>Sorbus aucuparia</i>	O-LF						
Lesser Stitchwort	<i>Stellaria graminea</i>	R						
Common Chickweed	<i>Stellaria media</i>			O		O-LF		O
Dandelion	<i>Taraxacum officinale</i> agg.		O	O-LF	O	O		
Red Clover	<i>Trifolium pratense</i>		O	O-LA	O	O		
White Clover	<i>Trifolium repens</i>		F	F-LA	F-LA	O-LF		O
Bulrush	<i>Typha latifolia</i>						LF	
Common Nettle	<i>Urtica dioica</i>	F-LA	F-LA	O-LF		F-LA	LF	R
Common Field Speedwell	<i>Veronica persica</i>							O
Tufted Vetch	<i>Vicia cracca</i>			LF				
Hairy Tare	<i>Vicia hirsuta</i>			O-LF				

10.2. Appendix 2—Valuation Criteria

- 10.2.1. Guidelines for ecological evaluation and the assessment of impacts have been published by Institute of Environmental Assessment (1995) and the Chartered Institute of Ecology and Environmental Management (CIEEM 2018).
- 10.2.2. The value that is attached to an ecological resource influences:
- whether, as part of screening, potentially affected features or resources are considered sufficiently valuable that there could be a significant effect that would trigger an EIA;
 - whether, as part of scoping, ecological features or resources are considered for inclusion in the EcIA—this is influenced by their value in relation to a ‘threshold’ level of value that should be defined during scoping;
 - deciding what mitigation is appropriate and
 - considering legal and policy implications.

10.2.1. Legislative Framework

- 10.2.1.1. Species, communities or habitats receiving legal protection under UK or EC law have high importance on national and international scales.
- 10.2.1.2. Internationally important sites include Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Ramsar sites. In the UK candidate SACs, potential SPAs and proposed Ramsar sites should be given the same consideration as designated sites in accordance with country specific policies and supporting guidance.
- 10.2.1.3. Species, communities or habitats requiring protection under EC law are listed on schedules I and II (whose conservation requires the designation of Special Areas of Conservation), IV (species in need of strict protection) and V (species whose exploitation may be subject to management measures) of the EC Directive on the Conservation of Habitats and Wild Fauna and Flora (92/43/EEC). The enabling legislation for the UK is the Conservation (Natural Habitat, &c) Regulations 2017. Species may also be scheduled under Appendix 1 of the Convention on the Conservation of European Wildlife and Natural Heritage 1979 (Bern Convention).
- 10.2.1.4. Other sites of international importance designated under international obligations include Biosphere Reserves (UNESCO Man and Biosphere Programme), Ramsar Sites (Convention on Wetlands of International Importance especially as Wildfowl Habitat 1971) and Special Protection Areas (EC Wild Birds Directive 79/409).

- 10.2.1.5. Species with special protection under UK law are listed on the schedules of the Wildlife and Countryside Act 1981 and amendments. The act also gives rise to statutory site designations i.e. National Nature Reserves, Sites of Special Scientific Interest, Areas of Special Protection for Birds, and orders e.g. Limestone Pavement Orders.

10.2.2. UK Site Designations

- 10.2.2.1. Sites of national importance include the statutorily designated Sites of Scientific Interest (SSSI) and National Nature Reserves (NNRs).
- 10.2.2.2. Lower levels of importance attach to locally designated sites such as those non-statutory site designations applied by Local Authorities or Wildlife Trusts e.g. Sites of Importance for Nature Conservation (SINC's or equivalent) or Local Nature Reserves designated under the National Parks and Access to the Countryside Act 1949. Such sites may be considered to be of High Local Importance i.e. important at the county or metropolitan level (CIEEM 2018).

10.2.3. Rarity of Species and Habitats

- 10.2.3.1. The British Red Data Book for vascular plants (Perring and Farrell 1983) lists 317 species or subspecies as extinct, endangered, vulnerable and rare. Nationally rare species are defined as occurring in 1–15 10km squares of the national grid in Britain, nationally scarce species occurring in 16–100 10km squares. The presence of a breeding population of any nationally rare species is of national importance whereas a breeding population of a nationally scarce species is of regional importance. Assemblages of 2 or more species may increase the importance of a site further.
- 10.2.3.2. Regional rarities are defined as occurring in 15 or fewer localities or 1km squares in a former Nature Conservancy Council region (NCC 1989).
- 10.2.3.3. Biodiversity: The UK Steering Group Report contains a “Long List” of key species in the UK that fall into 1 or more of the following categories: threatened endemics or globally threatened; where the UK holds greater than 25% of the world population; where numbers or range have declined by more than 25% in the last 25 years; nationally rare species; and statutorily protected species. Presence of viable populations of such species may be of high importance.
- 10.2.3.4. County floras and biodiversity action plans, or district action plans may identify species that are rare at the county or district level. Viable populations will therefore have conservation importance in these contexts.

- 10.2.3.5. Further information on species rarity may be found in Scarce Plants in Britain (Stewart et al 1994) and the Atlas of the British Flora (Perring and Walters 1962) and subsequent revisions.
- 10.2.3.6. Biodiversity: The UK Steering Group Report has identified a number of key habitats under the following criteria: those for which the UK has international obligations; rare habitats or those with high rates of decline; functionally critical habitats (marine areas); and habitats that are important for key species. Sites containing good examples of viable areas of any key habitat may be considered nationally important.
- 10.2.3.7. Importance may be attached to plant community types defined in the National Vegetation Classification (Rodwell 1991 etc) that are also described as rare, declining or with restricted distributions or are identified as being of particular botanical importance (NCC 1989).

10.2.4. Criteria for Overall Site Evaluation

- 10.2.4.1. The accepted criteria for site evaluation are set out by Ratcliffe (1977) in a Nature Conservation Review and are also explained in Guidelines for the Selection of Biological SSSI's (NCC 1989). The principal criteria are briefly outlined below:
- 10.2.4.2. **Naturalness.** Truly natural habitats are valued highly but are rare in Britain and most sites are modified and semi-natural at best. Physical habitat modifications vary greatly in their impact, some being beneficial whilst others are harmful. A greater degree of conformity of a particular community or site with semi-natural rather than highly modified vegetation types in the National Vegetation Classification and the absence of species indicating disturbance are likely to lead to attachment of higher importance. However, note that communities that appear to be intermediate between semi-natural NVC types are not necessarily of lesser quality.

Size. The area of a site or habitat judged to be viable varies greatly between different habitat types and with factors such as the condition of the habitat, the shape of the habitat area and surrounding land use. In addition, the territorial requirements of particular species within the site/habitat and habitat management factors may need consideration.

In general, larger sites or areas of habitat tend to be valued more highly because of the greater population sizes and hence more robust populations of the species within them; the potential for increased site or habitat diversity and hence greater species-richness over a larger area; and a reduced importance of edge effects (pollution drift, habitat

degradation/change for other reasons at the site edge) if the site is block rather than ribbon shaped. Small sites become increasingly important in areas of little semi-natural habitat.

Rarity. Criteria for rarity of species and habitats are outlined above. The scarcer the habitat or species then the higher the level of importance attached.

Diversity. Diversity tends to be valued positively as it increases. At the phytosociological level, some habitats are more species-rich than others and so have a higher value, provided that the richness does not involve non-native species. Some plant communities are intrinsically more species-rich than others so comparisons should only be made between the same community type.

The standard of floristic diversity is guided by the floristic tables within the National Vegetation Classification (NVC) (Rodwell 1991 etc). A community having more than 75% of the total plant species list for its type in the NVC would be rated very highly. Diversity of different communities within a vegetation formation (e.g. woodland) may also be rated highly as may structural diversity (e.g. rides, glades and differing age structures or canopy layering in woodland). Habitat diversity across a site may also increase its importance.

Fragility. Fragility is a measure of the intrinsic sensitivity of nearly all natural and semi-natural habitats and species to human impact. It is the fragility of such habitats and species which causes them to be more highly valued than any of the artificial substitutes which replace them through human activity; and the greater their fragility the greater their value. Fragility is therefore clearly related irreplacability or non-recreatability. Re-creation of habitats that have taken centuries to develop, sometimes with centuries of traditional management, is impossible to the full extent of their former complexity.

Typicalness. Typicalness is an indication of how characteristic the features of a site are compared to its particular ecosystem. It is intended as a guard against designation of those sites with unusual features as being always the most important.

Position in an Ecological/Geographical Unit. This is a landscape ecological criteria designed to identify sites or habitats which may be important to maintaining the viability of a larger group thereof; or which is essential in maintaining the population of a species with a large territory spanning several sites; or is one of a number of sites important to a

metapopulation of a species in fragmented landscapes; or may be important in a wildlife corridor or network of habitat patches.

10.2.5. Amenity Value

- 10.2.5.1. The amenity value of a site in ecological terms is generally seen as its value for the study or quiet enjoyment of wildlife. Sites with high intrinsic appeal and good access are therefore regarded as important in this context. Also important are issues such as site safety, proximity to schools and population centres and site management difficulties. Less emphasis is placed on the criteria outlined in section 9.1.4 in such situations.

10.2.6. Ecological Importance Summary Table

- 10.2.6.1. The following table has slightly modified from Regini (2000) with reference to CIEEM 2018. Its definitions are adopted in this report. Where species, habitats or sites occur in more than one category, the highest level of importance is applicable. Sites that meet the criteria for a particular designation are afforded the level of importance corresponding to that designation whether or not they are actually designated.

Table 8—Ecological Importance Summary Table

Level of Value	Examples
International	An internationally designated site or candidate site (SPA, pSPA, SAC, cSAC, pSAC, Ramsar site, Biogenetic Reserve). A viable area of a habitat type listed in Annex I of the Habitats Directive, or smaller areas of such habitat which are essential to maintain the viability of a larger whole. Any regularly occurring population of an internationally important species, which is threatened or rare in the UK. i.e. it is a UK Red Data Book species or listed as occurring in 15 or fewer 10km squares in the UK (categories 1 and 2 in the UK BAP) or of uncertain conservation status or of global conservation concern in the UK BAP. A regularly occurring, nationally significant population of any internationally important species. Also a regularly occurring and nationally significant number of an internationally important species during a critical phase of its life cycle.
National	A nationally designated site (SSSI, ASSI, NNR, Marine Nature Reserve) or a discrete area, which meets the published selection criteria for national designation (e.g. SSSI selection guidelines). A viable area of a priority habitat identified in the UK BAP, or of smaller areas of such habitat which are essential to maintain the viability of a larger whole. Any regularly occurring population of a nationally important species which is threatened or rare in the region or county (see local BAP). A regularly occurring, regionally or county significant population of any nationally important species. Also a regularly occurring and regionally or county significant number of a nationally important species during a critical phase of its life cycle.

Level of Value	Examples
Regional	Viable areas of key habitat identified in the Regional BAP or smaller areas of such habitat which are essential to maintain the viability of a larger whole; Viable areas of key habitat identified as being of Regional value in the appropriate Natural Area profile; Any regularly occurring, locally significant population of a species listed as being nationally scarce which occurs in 16-100 10km squares in the UK or in a Regional BAP or relevant Natural Area on account of its regional rarity or localisation; A regularly occurring, locally significant number of a regionally important species during a critical phase of its life cycle; Sites which exceed the County-level designations but fall short of SSSI selection guidelines, where these occur.
County / Metropolitan	Semi-natural ancient woodland greater than 0.25 ha; County/Metropolitan sites and other sites which meet the published ecological selection criteria for designation, including Local Nature Reserves selected on County / metropolitan; A viable area of habitat identified in County BAP; Any regularly occurring, locally significant population of a species which is listed in a County/Metropolitan "red data book" or BAP on account of its regional rarity or localisation; A regularly occurring, locally significant number of a County/Metropolitan important species during a critical phase of its life cycle.
District / Borough	Semi-natural ancient woodland smaller than 0.25 ha; Areas of habitat identified in a sub-County (District/Borough) BAP or in the relevant Natural Area profile; Local Nature Reserves selected on District/ Borough criteria Sites/features that are scarce within the District/Borough or which appreciably enrich the District/Borough habitat resource; A diverse and/ or ecologically valuable hedgerow network; A population of a species that is listed in a District/Borough BAP because of its rarity in the locality or in the relevant Natural Area profile because of its regional rarity or localisation; A regularly occurring, locally significant number of a District / Borough important species during a critical phase of its life cycle.
Parish / Neighbourhood	Areas of habitat considered to appreciably enrich the habitat resource within the context of the Parish or neighbourhood, e.g. species-rich hedgerows. Local Nature Reserves selected on Parish criteria.
Negligible	Low grade, widespread and common habitats.