

**Technical Appendix D**  
Ecology & Biodiversity  
Preliminary Ecological Appraisal

# **Preliminary Ecological Appraisal**

## **Leapers Wood Quarry, Nether Kellet**

**27<sup>th</sup> September 2022**

Report 0922/6

*Revision and update to report 0421/5*

Report commissioned by;

Clive Saul

Heatons Planning  
Suite 3, Manor Court  
Salesbury Hall  
Ribchester  
PR3 3XR

Report prepared by;



**South Lakes Ecology**  
Survey and Habitat Management

Tamsin Douglas MSc MCIEEM  
13 Rydal Road  
Ulverston LA12 9BU  
01229 582018

[mail@southlakesecology.co.uk](mailto:mail@southlakesecology.co.uk)

## EXECUTIVE SUMMARY

A habitat and notable species survey was carried out on and around Leapers Wood Quarry, Carnforth. It is proposed that the permitted extraction limits are deepened to allow more material to be removed from the existing extraction area.

The purpose of the survey was to identify protected and/or notable habitats and species which may be impacted by the proposals, to determine the likelihood of these impacts and suggest whether further surveys are required to quantify these impacts or to propose mitigation to compensate for these impacts.

A desktop search for records and information, a field survey, and protected species data search were undertaken to establish species and habitats present on and in the near vicinity of the quarry. A provisional Zone of Influence was determined using interim findings from the hydrogeology team (Hafren Water) identifying areas in which the hydrological impacts from de-watering a deeper void may be evident. Thwaite House Moss SSSI is within this zone and could be impacted by changes in the local hydrology (the quarry is also within the SSSI buffer zone), meaning Natural England must be consulted regarding these proposals.

A total of 8 broad habitat types were recorded in the survey area, and these were mapped and described in their local context. Of notable consideration were open mosaic habitat and deciduous woodland on limestone (including some ancient woodland and ancient re-planted woodland). One Biological Heritage Site (BHS) is present within the land holding, the southern edge of which has been lost to previous extraction consents. All these habitats and BHS are impacted to some extent by the daily noise and dust from quarrying activities. These impacts are unlikely to worsen if quarrying limits are deepened, but may continue for longer in time. No additional impacts are likely.

Numerous records of notable and protected species were collected from the vicinity of the quarry, though there are relatively few definite records of notable and / or protected species from within the quarry boundary. Within the peripheral habitat there are records of; nesting peregrine falcon in the quarry void, widespread nesting bird species in the woodland, scrub and hedgerows, badger setts and foraging activity, roosting bats in woodland, and widespread invertebrate species.

It is not considered that the deepening of Leapers Wood Quarry will have any specific impacts on the local ecology, as there will be no further lateral expansion of the quarry into adjacent habitats. The habitats and species of interest in and around the quarry are currently impacted somewhat by the day-to-day quarrying activities (through noise disturbance and dust deposition), and as a result of the proposals these impacts are likely to continue for a longer period of time (but are not expected to worsen).

Impacts on nearby protected sites (notably Thwaite House Moss SSSI) require further assessment depending on findings from the hydrogeologists.

A protected species method statement with avoidance measures should be written and adhered to for works around schedule 1 species (peregrine falcon) and for quarrying works (and blasting) in new areas that could potentially impact other nesting bird species and roosting bats. No further ecology surveys are required for these proposals.

A Biodiversity Net Gain assessment will be made as part of the Environmental Statement, which will include enhancement measures to improve the condition of nearby notable habitats.

## Contents

<b>1. INTRODUCTION</b> .....	4
<b>1.1 The aim of the survey</b> .....	4
<b>1.2 Proposed works</b> .....	4
<b>1.3 The survey area</b> .....	4
<b>2. SURVEY METHOD</b> .....	5
<b>2.1 Desktop study</b> .....	5
<b>2.2 Habitat survey</b> .....	5
<b>2.3 Protected species survey</b> .....	6
<b>2.4 Invasive species survey</b> .....	6
<b>2.5 Survey constraints</b> .....	6
<b>3. BASELINE ECOLOGICAL CONDITIONS</b> .....	8
<b>3.1 Desktop survey results</b> .....	8
<b>3.2 Habitat survey results</b> .....	11
<b>3.3 Protected and notable species survey results</b> .....	15
<b>3.4 Invasive species survey results</b> .....	17
<b>4. SURVEY ANALYSIS</b> .....	18
<b>5. SURVEY CONCLUSIONS</b> .....	20
<b>6. SURVEY RECOMMENDATIONS</b> .....	21
<b>6.1 Further Survey</b> .....	21
<b>6.2 Mitigation</b> .....	21
<b>6.3 Enhancements for gain of biodiversity</b> .....	21
<b>7. REFERENCES</b> .....	22
<b>APPENDICES</b>	
<a href="#">Figure 2: Habitat Map</a> –.....	24
Target notes.....	25
Legal context and descriptions.....	27
Photographs.....	29
Habitat Suitability Index (HSI) calculations table.....	33

## **1. INTRODUCTION**

### **1.1 The aim of the survey**

The aim of the survey was to identify any habitat or protected species issues or potential ecological constraints or concerns that would result from the deepening of quarrying activities within the current lateral extraction limits at Leapers Wood Quarry, Carnforth.

The survey was carried out following technical guidelines provided by CIEEM (Chartered Institute of Ecology and Environmental Management) and mapped following UK Habitat Classification guidance (see Appendices for full references).

The survey was originally carried out in April 2021, this is a revised and updated report following a further survey visit in September 2022

### **1.2 Proposed works**

The proposed works deepening the quarry workings within the current lateral extraction limits.

### **1.3 The survey area/ zone of influence**

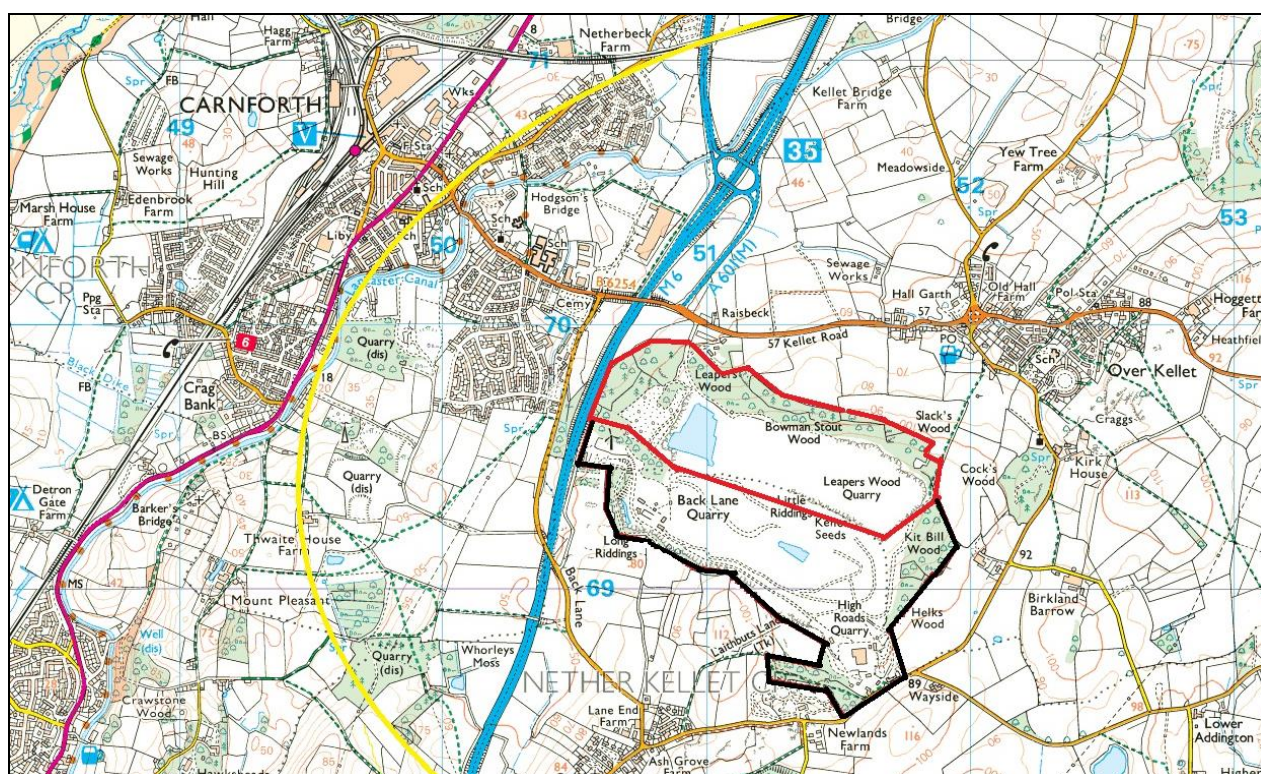
The habitat survey was carried out within the land management boundary of the quarry (red line on map below). Adjacent open land and field parcels were assessed using binoculars, where public rights of way were not present.

A zone extending to 500m from the development footprint was surveyed from public rights of way and access land to establish whether any ponds likely to support great crested newts were present.

The zone of influence of the proposed deepening of quarrying activities has not been determined as yet. Informal findings from the hydrogeology team (Rosie Marrant, Hafren Water, pers.comm) suggested that dewatering impacts could be felt up to 1.3km from the sump, but are unlikely to be manifest in a radial way around the quarry due to the complex geology. Impacts are not expected to be noted to the east of the M6 motorway, but there may be impacts on groundwater dependent sites where the water table is near to the soil surface west of the M6, and along the Netherbeck catchment (north and east of Carnforth). As such the area to the west of the M6 to a distance of 1.3km from the quarry were also included in the impact assessment.

The management boundary of the quarry (as well as the boundary of the adjacent Back Lane Quarry) and the potential zone of influence of the proposals (both from Leapers Wood and Back Lane Quarry) are shown on figure 1 below.

**Figure 1: Leapers Wood Quarry management boundary (red line), adjacent Back Lane Quarry (black boundary) and potential Zone of Influence west of M6 (yellow line).**



*OS Map copied under licence (No. 100055725)*

## 2. SURVEY METHOD

### 2.1 Desktop study

Previous survey reports, aerial photographs (Google Earth) and Ordnance Survey maps were used to assess the likely habitat types in and around the site, and to search for waterbodies that could host protected species such as great crested newts. Natural England and JNCC websites were used to obtain boundaries of any statutorily designated sites in the area.

Lancashire Environmental Records Network was consulted and a data search requested for protected species and Biological Heritage Sites within 2km radius of the boundary of the site.

### 2.2 Habitat survey

The fieldwork was carried out by Tamsin Douglas MCIEEM (South Lakes Ecology) on April 23<sup>rd</sup> 2021, and the update survey and habitat condition assessment were carried out on September 13<sup>th</sup> 2022.

The area was walked over, and habitats within the study area were described and mapped using standard UK Habitats Classification methodology (UKHab 2020). The Professional edition of the UKHab guidance was followed, and habitats classed to level 5 of the hierarchy where applicable. The minimum mappable unit was 25m<sup>2</sup>, with target notes used to describe smaller features.

## 2.3 Protected species survey

Evidence of and potential for protected species was assessed on the site on 23<sup>rd</sup> April 2021 and 13<sup>th</sup> September 2022. In particular, the potential for the following species/ animal groups was assessed:-

### Birds

The site was assessed for its potential to support notable bird species, or important assemblages of wintering or passage birds. In particular the habitats on site were assessed for their potential and likelihood to support cliff breeding birds, and any evidence/ sightings noted.

### Reptiles

The site was assessed for its potential to support reptiles such as common lizard, slow-worm and adder, following guidance issued in the 'Herpetofauna Workers Manual'.

### Amphibians

A search of the site was made to identify and assess any possible breeding ponds for amphibians, notably great crested newt *Triturus cristatus*. Ponds within 500m of the proposed development were assessed for suitability to host great crested newt using methods detailed by Oldham *et al* (2000). An assessment was also made of the quality of the habitat for foraging and potential for hibernation sites. Survey was carried out following guidance published in the 'Herpetofauna Workers Manual'.

### Bats

The site was assessed for its suitability for roosting, foraging and commuting bats. Trees, buildings and other structures were appraised for likelihood of hosting roosting and/or hibernating bats, and topographical features of interest to commuting bats were noted. Survey followed methods described in the Bat Workers Manual.

### Terrestrial mammals

The potential of the site to support other protected terrestrial mammals, notably badger *Meles meles*. Evidence of activity such as badger setts, paths, latrines, droppings/ spraints and feeding signs were noted and appropriate guidance followed.

### Other species

Presence of and potential for other protected and/ or notable species was recorded. Potential of the site to support important invertebrate assemblages was inferred from habitat quality, and any sightings recorded.

## 2.4 Invasive species survey

The presence of any invasive species within the survey area was recorded and mapped.

## 2.5 Survey constraints

The weather for the initial survey (April 2021) was sunny and warm, with a light breeze- and was suitable for signs or sightings of most diurnal wildlife, including reptiles.

The time of year was not ideal for assessing botanical quality of grasslands, as many plants had just started to come into leaf and species of interest are therefore harder to define. Woodland ground flora, however, was in full flower.

The bird nesting season had just started, but due to the cool spring many migrant birds had not yet arrived on breeding territory. The likelihood of notable breeding birds being present on the site was inferred from the habitat.

The second survey (September 2021) was carried out in warm, calm and sunny conditions – and was ideal for wildlife sightings (especially of reptiles). The bird nesting season had finished, but botanical quality of grasslands was more evident than in the April survey.

The likely presence of species mentioned in section 2.3 above was also inferred from the potential of the habitat to support them, desktop search information, and the professional judgement and knowledge of the surveyor.

Pedestrian access was only permitted outside the main working area of the quarry. Binoculars were used to assess the habitat beyond the deer fence.

Where habitats could not be directly accessed, other sources of information (previous surveys, reports etc) were used to guide the mapping. It is possible that small areas (less than minimal mapping unit) may have been missed, but overall these constraints are not considered to have impacted the conclusions of this report.



### 3. BASELINE ECOLOGICAL CONDITIONS

#### 3.1 Desktop survey results

##### 3.1.1 Protected and statutory sites search

There are numerous statutory protected sites within 2km of the quarry, and also further afield (between 2 and 5km away). These are described briefly below.

The quarry is within the protection buffer zone for several SSSIs (notably Thwaite House Moss). The nature of the proposed development, and its' proximity to protected wildlife sites, means that Natural England must be consulted to assess potential impacts of the proposals on these sites.

**Table 1: Protected sites within 5km of Leapers Wood Quarry**

Protected area/ site	Description of interest	Distance from quarry
Thwaite House Moss SSSI	Botanical (fen & wet woodland)	1km
Crag Bank SSSI	Botanical (neutral grassland)	1.5km
Arnside & Silverdale AONB	Landscape	1.6km
Forest of Bowland AONB	Landscape	2.2km
Morecambe Bay SSSI SAC SPA Ramsar	Marine/ intertidal habitats and species. Breeding & wintering waders and wildfowl.	2.3km
Warton Crag SSSI LNR	Botanical & butterflies	3km
Warton Crag Quarry LNR	Botanical & butterflies	3km
Burton Wood SSSI	Botanical (woodland)	3.2km
Morecambe Bay Pavements SAC	Limestone Pavement	5km
Leighton Moss SSSI SPA	Botanical (reedbed) & avifauna	5km
Cranglebarrow & Deepdale SSSI	Botanical (woodland) & limestone pavement	5km

There are four Natura 2000 sites (Morecambe Bay SAC and SPA, Morecambe Bay Pavements SAC and Leighton Moss SPA) within 5km of the proposals. The nature of the proposals, habitats present on site, and distance from the designated sites means that further assessment with relation to impacts on these sites (Habitat Regulations Assessment) should not be necessary.

There are also Limestone Pavement Orders in place in various locations around the quarry, the closest being the Over Kellet Limestone Order which includes areas within the site adjacent to the current operational area, and by the adjacent Back Lane quarry.

##### 3.1.2 Non-statutory sites and notable habitats search

A total of 26 Biological Heritage Sites (sites of county importance) were found within 2km of the quarry, of which 15 were within 1km. Habitats were predominantly woodland or grassland on calcareous soils or rock, as well as some habitat mosaics. A brief description of sites within 1km is included in the table below:

**Table 2: Biological Heritage Sites within 1km of Leapers Wood Quarry**

Biological Heritage Site	Description of interest	Distance from quarry
Leapers Wood, Bowman Stout Wood & Slack's Wood	Ancient woodland & limestone pavement	Within site
Long Riddings Wood	Ancient woodland	Alongside SW boundary of site
Kit Bill Wood	Ancient woodland	Alongside SE boundary of site
Kellet Road Verges	Species rich grassland	50m north
Helks Wood	Ancient Woodland & Limestone pavement	150m south
Helks Wood Farm Pasture	Species rich grassland	200m east
Limestone Pavement and Craggs, South of Cock's Wood	Exposed rock, species rich grassland	250m east
Cock's Wood	Semi natural woodland, rock outcrops	250m east
Lundsfield quarry north	Habitat mosaic	600m west
Hawthorns Rocks	Pasture on limestone outcrops	600m south
Over Kellet Craggs	Species rich grassland	650m east
Lundsfield Quarry Central	Habitat mosaic	700m west
Lancaster Canal	Aquatic vegetation, birds, odonata	700m west
Long Dales Lane Fields	Grassland on limestone outcrops	750m south
Over Kellet Pond	Botany & amphibian assemblage	750m east

A search looking for priority habitats listed under section 41 of the NERC Act 2006 (previously known as BAP habitats) found several results within 1km of the quarry boundary. Within the site boundary are deciduous woodland, ancient woodland and ancient re-planted woodland. Other nearby habitats include limestone pavement, traditional orchard, lowland fen, calcareous grassland and lowland meadows.

### 3.1.3 Protected and notable species search

The data search from Lancashire Environmental Records Network provided detailed records of protected, rare, scarce and alien species within 2km radius of the quarry. A total of almost 3000 records were returned of various species, almost half of these were botanical. Biological records provide a useful baseline of information, but some species groups are under-recorded – so a lack of records does not necessarily equate to that species not being present in the local area.

A table of key species which are of notable consideration within the context of the quarry and its routine operations is shown in Table 3 below. Notable bird species have not been included in the table below, unless they are of specific interest to the site, or have further legislative protection, as all species of bird are protected whilst nesting. Tetrad results for breeding birds mean that the species has been recorded within the 2km square in which the quarry is found (many records are no more detailed than this).

A search was also carried out for invasive species recorded within 2km of the quarry. Most of these records were botanical and none appeared to be from within the quarry boundary other than sycamore (non-native nut not considered invasive).

**Table 3: Species of conservation concern which have been recorded within 2km of the quarry\***

Species	Priority species listed under s41 of NERC Act 2006??	Wildlife and Countryside Act 1981 (as amended) Sch 1,5 or 8.	Proximity to site	Number of records (most recent)
Palmate newt		Yes	700m	4 (2017)
Smooth newt		Yes	700m	14 (2017)
Great Crested Newt	Yes	Yes	700m	20 (2014)
Common toad	Yes	Yes	700m	7 (2017)
Common frog		Yes	600m	13 (2017)
Common lizard	Yes	Yes	1.6km	4 (1983)
Slow worm	Yes	Yes	1.3km	2 (1983)
Otter	Yes	Yes	600m	11 (2019)
Badger**			Site	5 (2016)
Bats (8 named species)	Yes	Yes	200m	88 (2012)
Hedgehog	Yes		200m	17 (2019)
Polecat	Yes		1km	2 (2013)
Dingy skipper	Yes		700m	52 (2019)
Ringlet	Yes		700m	5 (2016)
Small heath butterfly	Yes		700m	35 (2013)
Northern brown argus	Yes	Yes	2km	1 (2004)
Wall butterfly	Yes		700m	15 (2009)
Wall mason bee	Yes		1.5km	16 (2001)
Raven			Tetrad***	
Peregrine falcon		Yes	Back Lane Quarry	Fledged chicks 1990
Kestrel			Tetrad	
Oystercatcher			Tetrad	

\*Previously BAP (Biodiversity Action Plan) priority species

\*\*Protected under Protection of Badgers Act 1992

\*\*\*Tetrad record- see above for explanation

## 3.2 Habitat survey results

The habitats were mapped, following UKHab methodology (see methods section and appendices), as shown in Figure 2 in the appendices. Descriptions of the major habitats are given in section 3.2.2 below, and detailed target notes on habitats or species of interest included as appendices to this report.

Photographs of the area of the proposed works are provided at the end of the report.

Land adjacent to the quarry was assessed using binoculars, and is described in 3.2.4 below.

### 3.2.1 Habitats recorded within survey area

- w1f Lowland mixed deciduous woodland
- w1h5 Mixed plantation woodland
- h2 Hedgerows
- h3h Dense scrub, no dominant species
- g2a5 Calcareous grassland
- g4 Improved pasture
- u1a Open mosaic habitat (disturbed ground)
- s1d Inland rock and scree

### 3.2.2 Habitat descriptions

#### w1f - Lowland mixed deciduous woodland

This habitat dominates the periphery of the quarry. Canopy species are predominantly ash and sycamore with wych elm, small leaved lime, oak and birch. Understorey species comprise hawthorn and hazel, with some holly and rowan. Much of the hazel is coppice re-growth. There are two areas of ancient woodland, and one area of replanted ancient woodland – all of which comprise the Leapers Wood, Bowman Stout Wood and Slack Wood Biological Heritage Site. There is a semi-natural woodland on the western boundary of the site alongside the M6.

Limestone outcrops are frequent in the undisturbed sections of woodland, and small areas of limestone pavement are still evident in the woodland to the west of the quarry access road. Ground flora is typical of established woodland with bluebell, primrose, dog's mercury, wood anemone, ramsons and ground ivy. There is evidence of rabbit grazing and badger activity in the woods (clear paths, digging and active setts).

These areas have a mixture of ages of trees, with some regeneration. There were no veteran trees, and few mature trees have features suitable for hole nesting birds and roosting bats. There is fallen and standing deadwood present, and sites appear to be lightly managed. There is a band of standing dead and dying trees along the southern edge of Bowman Stout Wood and Slack Wood. This band is between 10 and 30m wide, and is affecting ash in particular, but also other species such as sycamore, birch and cherry. It is likely that the trees have died, or are suffering due to lack of water- as this area is perched above the tall south facing cliffs of the quarry where they are exposed to full sun, and any water will drain freely through the limestone bedrock. The previous two springs have been hot and/ or dry increasing this stress. It is likely that ash are particularly susceptible as they are already stressed from the presence of ash dieback disease.

Leapers, Bowman Stout and Slack Woods are assessed as being in good condition, losing points only for the lack of veteran trees and presence of ash dieback. The semi-natural woodland on the western boundary is in fairly good condition – losing points for the issues above as well as lack of vertical structure and amount of deadwood.

### w1h5 - Mixed plantation woodland

There is a large area of planted woodland alongside the M6 to the west, linking the semi natural woodland above with newly planted areas (over open mosaic habitat) and planted woodland bordering the adjacent Back Lane Quarry. Most trees are quite even aged, with some older trees and some scrub regeneration in canopy gaps. Species include ash, sycamore, alder (non-native) and birch, with some conifers. Willow, wych elm, hawthorn and hazel are also present in the understorey. Ground flora is variable and includes bramble and nettle in open areas, with bare ground in more densely shaded places.

These woodland areas have been assessed as moderate quality habitats, losing points for not having much deadwood (fallen and standing), no veteran trees, limited age variation and lack of a good shrub layer or woodland ground flora. Some areas of woodland also had a prevalence of non-native species in the canopy.

### h2 - Hedgerows

Hedgerows (boundary line of shrubs over 20m long) are of intrinsic value, aesthetically, ecologically and functionally. They have value as stock proofing, but also for birds and small mammals as they provide food and shelter/ nesting opportunities. Hedgerows that aren't as intensively managed (not flailed annually) are of higher value as they offer more nesting potential for birds and generally produce more berries. Hedges can also form important flightlines (navigational tools) for bats, and can provide sheltered foraging areas for them. Hedgerows can also be of importance as 'wildlife corridors', linking larger areas of habitat such as woodlands. Tall hedgerows are present either side of the access road to the quarry from the B6254 Carnforth Road. To the west the hedgerow is predominantly hawthorn. To the east it is developing into a line of trees with hawthorn, cherry and sycamore. A hawthorn hedgerow forms the boundary between the improved pasture and main road, and a defunct hawthorn hedge forms the northern boundary of the site.

This habitat was not condition assessed as it is not under management control of the quarry.

### h3h - Dense scrub, no dominant species

This category includes all locally native low growing (usually under 5m) shrubs as well as bramble and gorse. Dense scrub can be very important for nesting and feeding birds and, depending on the species present, it can also be of value for invertebrates.

There are two main areas of this to the west of the quarry buildings. One area near to the access road comprises self-seeded scrub and young trees such as sycamore, hazel, ash, willow and birch as well as some bramble and buddleia. It is a dense patch and well suited to nesting birds.

The second area is between Leapers Wood Quarry and Back Lane Quarry and is dominated by mature buddleia with some willows. There is little ground vegetation as the scrub has established on tipped material. This will provide good nectaring sites for invertebrates and bird nesting habitat, but buddleia is a non-native bush and as such is not a natural food plant for any invertebrates. As such its spread can go unchecked by natural processes and on many sites ongoing buddleia control is required to ensure that the native flora is not displaced.

These areas of habitat were assessed as being in moderate condition – losing points because of the prominence of buddleia (especially in the area near to the turbine/ Back Lane Quarry boundary).

#### g2a5 - Calcareous grassland

The underlying bedrock of the site is limestone, and much of the ground flora reflects this. Woodland and scrub are dominant on the site, but along the track at the top of the quarry cliffs is a linear stretch of species poor limestone grassland. It is dominated by grasses and bramble has established in places. Species include wild strawberry, barren strawberry, mouse-ear hawkweed, sedges, St.Johns wort, bird's foot trefoil and ground ivy as well as woodland ground flora species. The track is only accessed on foot at present, so the grassland is undisturbed – but there is a lot of encroachment by bramble.

The condition assessment for this habitat is moderate due to the large proportion of bare ground and undesirable species (bramble).

#### u1a - Open mosaic habitat (disturbed ground)

This is vegetation establishing on recently disturbed ground, such as spoil, gravels and tipped material. An area of this is present along the northern and western edges of the quarry (above the working area). The northern area is quite small and a calcareous grassland community is establishing surrounded by bare ground and tipped material.

To the west is an extensive area of this habitat mosaic on tipped material and rubble. There are patches of woodland ground flora -such as bluebell, dog's mercury and primrose, as well as patches of establishing grassland with bugle, wild strawberry, wood sage, common dog violet and lady's mantle evident at this stage of the season. Other areas are bare, or with scattered colonists such as coltsfoot and teasel and young scrub (especially buddleia).

The uneven terrain, mixed vegetation and rubble provide very good reptile habitat – though no evidence of reptiles was seen despite the good conditions.

Areas such as this can also be very important for invertebrates, such as mining bee and wasp species.

This habitat was assessed as being in moderate condition, failing on the lack of pools amongst the habitat mosaic, and prominence of buddleia throughout the area.

#### g4 – Improved pasture

There is an area of improved sheep grazed pasture at the northern edge of the site, which is contiguous with pasture to the west. This has little value to wildlife, though the boundary hedges are of interest.

This habitat was not condition assessed as it is not under management control of the quarry.

#### s1d – Inland rock and scree

Surrounding the working area of the quarry are limestone cliffs with varying degrees of vegetation. The cliffs at the eastern end of the quarry appear to have been undisturbed for a period and have some vegetation developing in crevices and ledges. The cliffs along the northern edge of the quarry are clearer, and appear to be more recently worked.

Depending on the level of disturbance, this habitat can be of particular interest for cliff nesting bird species, roosting bats and for bare rock and scree vegetation (especially ferns and bryophytes). The eastern end of the south-facing cliffs appear to be suitable for nesting raptors and corvids – with various accessible ledges available. A colony of jackdaw were very vocal in the area, but there was no sightings of raven or peregrine falcon during the fieldwork (though peregrine falcons would be sitting on eggs at this stage of the season, and very hard to find). Breeding bird surveys carried out in the

adjacent Back Lane Quarry recorded proven breeding of peregrines in the quarry void – with the nest site in the south-east corner (near to the block factory in Back Lane Quarry).

This habitat was not assessed as there was no safe means to access it from the boundary track.

A summary table of the habitats described above and their importance in the context of British conservation and the legal framework is shown below (Table 4).

**Table 4: Habitats of conservation concern**

Habitat	Priority habitat listed under s41 of NERC Act 2006?*	Is habitat a notable consideration?
Lowland mixed deciduous woodland	Yes	Yes, especially ancient woodland sections
Mixed planted woodland		
Hedgerows	Yes	Yes
Dense scrub		
Calcareous grassland	Yes	Yes
Improved pasture		
Open mosaic habitat	Yes	Yes
Inland rock & scree		

\* Previously UK Biodiversity Action Plan (BAP) habitat

### 3.2.3 Surrounding habitat (adjacent to red line boundary of quarry)

The quarry is bounded by the M6 to the west and Back Lane Quarry (an active limestone quarry) to the south. Habitats surrounding the quarry to the north and east are agricultural pasture, most of which is not of particular ecological interest – though the hedgerows are of local value.

Kellet Road Verges BHS is located alongside the Kellet Road near to the quarry entrance. It was designated for species-rich grassland, but its current status is unknown.

### 3.2.4 Ponds within 500m of the proposed development

Previous reports, online aerial images and OS maps were used to identify any potential great crested newt breeding ponds within the quarry, or within 500m of the proposals. One small sump/settling pond was found within the quarry (all other water bodies in the quarry that are marked on the map had dried up/ were no longer present). This pond is too small to be mapped or described above. It is fenced and currently holds a very small amount of water. The HSI score for the pond was 0.48 – of poor suitability for breeding great crested newt.

The quarry is bounded to the west by the M6, which is a barrier to any newt dispersal, so no ponds were surveyed beyond this. To the north is Back Lane Quarry, which has one settling pond (which was recently assessed and scored 0.52 – below average – for suitability for great crested newts). There were no other ponds found within 500m of the quarry.

### **3.2.5 Habitats and sites present in the (potential) Zone of Influence**

The habitats in the area west of the M6 (up to 1.3km from the quarry) were assessed on a desktop search (in conjunction with advice from the hydrogeologists), looking for any areas that could be potentially impacted ecologically by a change in levels of groundwater.

Most of the land in this potential Zone of Influence is modified grassland (agricultural pasture or silage fields) or urban/ residential. Two key areas highlighted for further study were Netherbeck Stream, and the area around Thwaite House Moss SSSI and Whorley Moss.

Netherbeck Stream is a small watercourse with no designations. Careful checks of the biological records search found no evidence of any notable or protected species present in or around this watercourse that could be impacted by changes in the hydrology. River Keer (which the Netherbeck stream flows into) is not considered by the hydrogeologists to be vulnerable to changes in Netherbeck stream due its larger catchment.

Thwaite House Moss SSSI and the adjacent Whorley Moss were walked over (access limited to public footpaths) on September 13<sup>th</sup> 2022 to ground truth the assumption that they could be potentially impacted by the proposals. Both of these areas appeared to be quite dry underfoot despite the previous 24hours of rain, but the vegetation evident in the southern (ungrazed) part of Thwaite House Moss and in lower areas of Whorleys Moss were still characteristic of fen, moss and wet woodland habitats such as those present where the water table is at or near the ground surface. Grazed habitats within the SSSI, but outside the fenced southern fen/ moss/ woodland, had lost much of their floristic interest. Impacts on the SSSI will need further assessment by Natural England once a more robust model of likely impacts on the groundwater is available.

## **3.3 Protected and notable species survey results**

### **3.3.1 Birds**

Nesting birds are likely to be present within scrub, woodland and individual trees on the site. No notable species were observed during the fieldwork – though many spring migrants are yet to arrive on breeding territory. Species such as spotted flycatcher, willow warbler, bullfinch, tawny owl and song thrush would be expected to use the mature broadleaf woodlands. Singing willow warbler, wren and chiffchaff, and calling sparrowhawk were heard in the woodland, and widespread species such as dunnoek, blackbird, great tit, blue tit and chaffinch were observed during the survey.

Peregrine falcon, kestrel and raven are often associated with quarries as they are cliff nesting species. None of these species were seen or heard during the fieldwork, though the field survey was carried out in the middle of the day, when birds are often less vocal. Several corvids (probably jackdaw) were calling and displaying around the eastern corner of the quarry. Most of the higher quarry cliffs are along the northern and eastern edge of the quarry – which look suitable for nesting raptors and appear to be relatively undisturbed. There is some anecdotal evidence that peregrine falcons have recently bred there. Peregrine falcons were recorded successfully breeding in the adjacent Back Lane Quarry in spring 2022 (Breeding bird survey carried out by South Lakes Ecology for Aggregate Industries). This species tends to return to the same nest site, but due to the dynamic nature of the site there is always scope for them to re-locate to use a nest site on the Leapers Wood side of the quarry void.

Oystercatcher breed on open stony ground and are often encountered in quarries. This species was seen in the previous (2009) fieldwork, but not observed during the 2021/22 survey. There was a lot of quarry traffic throughout the quarry void, which may have deterred the species from breeding- though they may have been missed due to the noise and dust of the quarry. The habitat on site is still broadly suitable for this species.



### **3.3.2 Reptiles**

The habitat is broadly suitable for common lizard and slow worm, especially around the more open areas above the quarry offices in the west. Adjacent habitats are less suitable however, with close grazed pasture and woodland, and the M6 is a barrier to dispersal. There are no local records of reptiles – the only ones from the data search are from 1983 at a site over 1km away. Slow worms are very cryptic and hard to see without a targeted survey, but common lizards are quite easily spotted in good weather conditions. No reptiles were seen during the fieldwork (which was carried out in very good reptile spotting conditions on both occasions).

### **3.3.3 Amphibians**

Amphibians, including great crested newt, are often encountered in quarries- including in settling ponds. There is only one small settling pond or sump pond present on site, and no nearby network of suitable ponds- reducing the chance of amphibians using the site. The water was very turbid, and the pond was very small with little water present due to the prolonged dry conditions this April. No sign of amphibians or other aquatic life could be seen in the pond. There are no records of amphibian within the quarry. The closest records for all the widespread species, and for great crested newt are from ponds 600m away from the quarry boundary.

A Habitat Suitability Index (HSI) calculation was done on the settling pond, to establish likelihood of use by great crested newts, which generated a score of 0.48 (poor). See appendices for calculation table.

### **3.3.4 Bats**

None of the buildings on site have particular suitability for roosting bats. Bats may well use cracks and fissures in the quarry walls to roost during the active season, and possibly to hibernate.

Bats also use trees to roost, though there few trees with good potential roost features in the woodland – most are still relatively young and clean stemmed, though the dieback of trees along the top of the quarry may create some habitat.

The site provides good foraging potential for bats around woodland edges, and there are some sheltered flight lines (such as the woodland edges) around most of the site which can be used by bats to safely move between roosting and foraging locations. A total of eight species of bat have been recorded roosting and foraging in the general area around Leapers Wood Quarry.

### **3.3.5 Terrestrial mammals**

There was a lot of signs of badger activity in Leapers Wood, Bowman Stout Wood and Slack Wood. At least four different groups of badger holes were identified, including a main sett with 8 clear holes and several disused entrances. There were clear badger/ mammal paths criss-crossing the woodland, leading to and from the sett entrances. The other three locations with clear/ recently used badger setts had between 1 and 3 holes and are likely to be annexe, satellite or outlier setts for the resident badger clan.

Quarry staff from Back Lane Quarry describe a crossing point where mammals such as badger and deer are often seen moving between the southern areas of woodland around Back Lane Quarry and the woodland around Leapers Wood Quarry.

Evidence of light rabbit grazing was noted throughout the survey. Hedgehog have been recorded in the local area, though the quarry does not provide particularly good habitat for

this species. There are also historic records of red squirrel in the general area (1993), but no recent sightings.

### 3.3.6 Other species

The bare ground, limestone grassland and deciduous woodland can all provide good quality habitat for invertebrates, including notable species. Only widespread species were observed during the surveys (orange tip butterfly, speckled wood butterfly, small tortoiseshell, admiral butterfly, peacock butterfly and white tailed bumblebee). The data search provided records of notable species near to the site, but none from the site – though lack of records does not mean that these species are not present on the site, just that there has not been any suitable recording effort.

### 3.3.7 Protected and notable species summary

Within 50m of the proposed works :

The following signs or sightings of protected or notable species were seen during the survey within 50m of the works footprint.

- Nesting birds in woodland and scrub.
- Badger setts and signs of foraging badgers

The potential for protected and notable species identified during the survey within 50m of the proposed works was:-

- potential for breeding amphibians in the settling pool (common toad and newts-including great crested newt): low.
- Potential for notable cliff nesting birds (i.e. peregrine falcon): moderate-high
- Potential for ground nesting birds within quarry (i.e. oystercatcher): low- moderate
- Potential for roosting bats within rock faces and fissures: low
- Potential for invertebrates of interest around open mosaic habitat and limestone grassland: moderate- high

Within the broader survey area:

Extensive badger activity was noted in the woodland around Leapers Wood quarry, with foraging routes through the boundary woodland of Leapers Wood and Back Lane quarries and an identified crossing route of the quarry road to the east of the Back Lane Quarry offices.

Bats are active in the local area and are likely to roost within the adjacent woodland and forage in and around the quarry. None of the buildings on site were of particular suitability for roosting bats.

## 3.4 Invasive species survey results

No notable invasive species were seen or recorded during the survey.

The data search provided records invasive and non-native species within 2km of the quarry. Most of these were botanical, and all were outside of the quarry.

## 4. SURVEY ANALYSIS

The table below provides a summary of all the features discussed above, and an indication of whether they may be impacted by the proposals, or if further investigations are required.

Feature	(Potentially) affected by development		Rationale
	Yes	No	
<b>Designated sites</b>			
Thwaite House Moss SSSI			Needs further survey/ analysis following results of hydrogeology impact assessment. SSSI citation suggests it is an independent hydrological unit as it sits in a depression, but clarification needed.
Crag Bank SSSI, and a further 5 SSSI sites within 5km			All suitably distant from any potential impacts from deepening quarry workings.
Arnside & Silverdale AONB and Bowland AONB			Quarry is more than 1.5km from the boundaries of these sites, and so unlikely to cause any detriment to landscape character within them.
European Designated Sites - Morecambe Bay SAC SPA, Morecambe Bay Pavements SAC and Leighton Moss SPA			Quarry is more than 2km from any of the site boundaries, and the sites are unlikely to be affected by deepening of the quarry.
<b>NERC S41 priority habitats and local Biological Heritage Sites</b>			
Leapers Wood, Bowman Stout Wood & Slack Wood BHS, Long Riddings Woods BHS, Kit Bill Woods BHS.			Adjacent to red line boundary, and likely to be somewhat impacted by current (and future) quarrying activity through noise and dust, but no additional impacts foreseen due to deepening extraction.
Kellet Road Verges BHS			Close to access point of quarry from M6. Likely to be somewhat impacted by quarrying activity from dust deposition from passing wagons, but no additional impacts foreseen due to proposals.
A further 11 listed BHS within 1km of the quarry boundary including 2 wetland sites- Over Kellet Ponds BHS and Intack Woods BHS			Scoped out of assessment due to distance from quarry, or in case of the wetland sites, a lack of vulnerability to changes in the groundwater (east of M6 boundary and/or not groundwater dependent habitats).
Woodland and ancient woodland priority habitat			As for the woodland BHS above – adjacent to red line boundary and unlikely to be further impacted by deepening of quarry activity.
Calcareous grassland priority habitat			Within management boundary of quarry. Somewhat impacted by quarry activity at present (esp. dust), but no additional impacts foreseen due to deepening extraction.
Open mosaic priority habitat			
Hedgerow priority habitat (part)			

Protected and priority species highlighted by county data search and site survey			
Amphibians (including great crested newt)			Only 1 small sump pond on site with low suitability for great crested newt, and no records of amphibians. Closest records of newts and other amphibians are from Over Kellet (700m to north-east). Amphibians are unlikely to be present on site, and hence very unlikely to be impacted by the proposals.
Common lizard and slow worm			Site survey revealed suitable habitat around periphery of site, but it is surrounded by low-suitability habitat. No sightings during fieldwork, no records from within 1km, and no records from local area for almost 40 years. Reptiles are unlikely to be present on site, and hence very unlikely to be impacted by the proposals.
Badgers			Badger setts and badger activity recorded in boundary woodland (outside the red line boundary). These animals are currently disturbed on occasion by blasting activity, but no additional impacts from deepening are expected.
Bats			Several species recorded in local area. Suitable roosting habitat in some rock faces -though subject to significant noise and dust disturbance on a daily basis, making occupation less likely. Blasting in new/undisturbed areas should follow a method statement.
Hedgehog			No evidence of presence within the quarry, but records within 200m. Very limited feeding, transit or resting habitat on site. Impacts from proposals are unlikely.
Peregrine falcon (listed on Schedule 1 of Wildlife & Countryside Act)			Regularly breeds in the quarry void (within Back Lane Quarry), but suitable habitat also present in Leapers Wood part of the quarry void. Avoidance measures already in place to prevent disturbance of nesting pair resulting from quarrying. Deepening the void is unlikely to have any additional impacts.
Cliff and quarry nesting birds (not listed on schedule 1)			Gulls, jackdaw and oystercatcher known to/ likely to breed within working area of quarry void. Deepening the quarry unlikely to have any impact on cliff nest sites.
S41 butterfly and moth species and other notable invertebrates			No priority species recorded on site (closest least 700m from site). Limited habitat available in active quarry to support these species.

## 5. SURVEY CONCLUSIONS

It is not considered that the deepening of Leapers Wood Quarry will have any significant direct physical impacts on the local ecology, as there will be no further lateral expansion of the quarry into surrounding habitats.

The habitats and species of interest in and around the quarry (including adjacent Biological Heritage Sites) are currently impacted somewhat by the day-to-day quarrying activities (through noise disturbance and dust deposition), and as a result of the proposals to increase the amount of extractable material these impacts are likely to continue for a longer period of time (but are not expected to worsen).

Features which need further investigation, or need avoidance and/ or mitigation measures in place include:

- **Protected sites**

Natural England needs to be consulted regarding potential impacts on nearby SSSI sites – notably Thwaite House Moss SSSI, as this is potentially within the Zone of Influence of any de-watering impacts.

- **Peregrine falcon**

Peregrine falcon regularly breeds on cliffs within the Back Lane/ Leapers Wood quarry void. Listed under Schedule 1 of the Wildlife and Countryside Act it has greater legal protection than other nesting bird species. Avoidance measures are in place to minimise risk of disturbance to nesting pairs (including regular surveys to assess where the birds are nesting each year). These measures need to be adhered to, to ensure minimal impacts on this species.

- **Bats and nesting birds (within active quarry)**

Bats are likely to use the peripheral habitat for roosting, and are very likely to forage around the quarry edge and inside the quarry if there is insect prey there. They are active at night, when there is no human/ vehicle activity in the quarry. The quarry cliffs could be used by roosting bats on occasion, but are very unlikely to be used as a regular roost site or by a significant number of bats due to the ongoing noise and disturbance by the ongoing quarrying activity.

Birds such as kestrel and corvids may nest in crevices and ledges around the quarry and oystercatcher may nest on open ground on the quarry floor. Once in the process of nesting, birds cannot legally be displaced until chicks have fledged and/ or the nest is abandoned (such as through predation).

The deepening of the quarry is unlikely to have any additional impacts on bats or nesting birds, but blasting and quarrying of new (or recently undisturbed areas) should follow a protected species method statement to ensure suitable guidance has been followed.

## **6. RECOMMENDATIONS**

### **6.1 Recommendations for further survey**

No further surveys are required to determine the impacts of the proposals on local wildlife.

### **6.2 Recommended mitigation for ecological impacts not requiring further survey**

#### Peregrine falcon

Adopt and follow a formal protocol for the avoidance of disturbance to breeding raptors on quarry faces. The location of any peregrine falcon nests within the entire quarry void (both Leaper's Wood and Back Lane Quarries) should be identified in spring each season (by a dedicated experienced member of staff or an ecologist). The protocol should describe accepted methods of work around the nesting site, avoidance of blasting close to an occupied nest, avoidance of machinery use and ground disturbing operations within 50m of nesting site within the breeding season (March-July). It would be useful to collaborate with Back Lane Quarry to make an overarching protocol for the whole quarry void as the birds are likely to move nesting site as the quarries develop and different areas become suitable for breeding.

#### Nesting birds

If works are to commence between March and August (inclusive) in new blasting areas, or areas to be quarried that have been previously undisturbed, the areas should be first assessed for presence of nesting birds (especially corvids, kestrel and oystercatcher). Likewise, any clearance of vegetation within the bird nesting season (March to August) should only be carried out after a nesting bird check has been carried out by a suitably qualified person.

#### Roosting bats

Adopt and follow a protocol for the avoidance of disturbance and injury to roosting (including hibernating) bats that could be present in crevices in rock faces around the quarry. It is considered unlikely that bats would roost in worked areas of the quarry due to the levels of noise and dust disturbance, but as bats and their roosting sites are protected under UK law a strategy should be in place to ensure these impacts have been considered and avoidance measures put in place.

### **6.3 Recommended enhancements to encourage biodiversity gains**

Following local planning guidance, measures to encourage a net gain of biodiversity should be included for all new developments. Biodiversity Net Gain assessment and recommendations are included in the Environmental Statement chapter of the EIA. Enhancements to peripheral habitats (including limestone grassland and deciduous woodland) are recommended as many of these habitats are not in good condition and require interventions to prevent further declines.

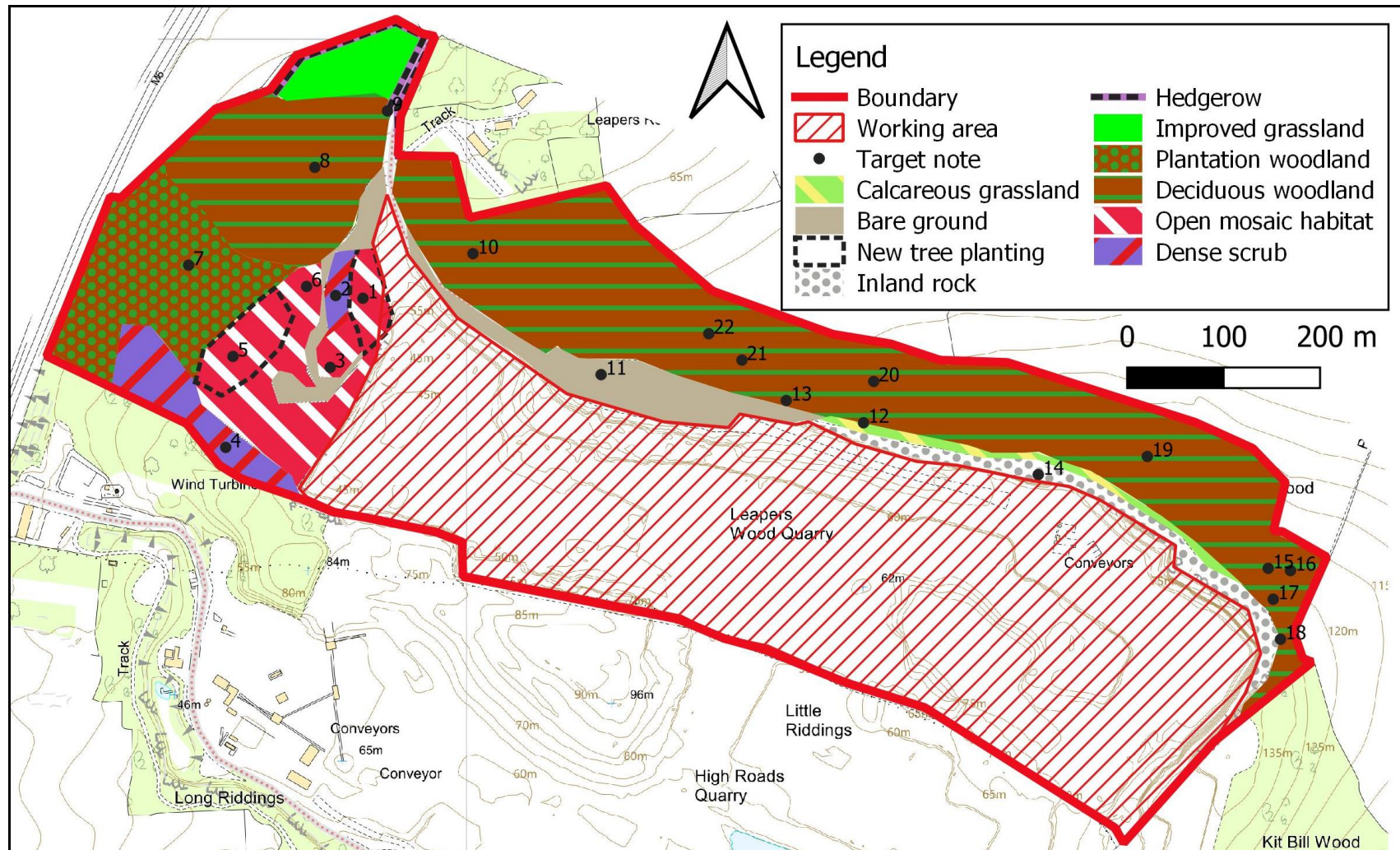
## 7. REFERENCES

- Beebee T. (2013) *Amphibians and Reptiles* Pelagic Publishing
- Butcher B., Carey P., Edmonds R., Norton L. and Treweek J. (2020) The UK Habitat Classification User Manual version 1.1 [www.ukhab.org](http://www.ukhab.org)
- DEFRA (2007) *Hedgerow Survey Handbook*
- Gent A.H & Gibson S.D. eds (2003) *Herpetofauna Workers Manual* JNCC
- Harris S. & Yalden D.W. (eds.) (2008) *The Handbook of British Mammals*, third edition Blackwell Scientific Publications, Oxford
- Halliday G. (1997) *A Flora of Cumbria* University of Lancaster
- Institute of Ecology and Environmental Management, Professional Guidance Series (CIEEM [www.cieem.net](http://www.cieem.net)) [Members only]
- Mitchell-Jones, A.J. (2004) *Bat Mitigation Guidelines* English Nature, Peterborough
- Mitchell-Jones, A.J. & McLeish A.P. (2004) *The Bat Workers' Manual* 3<sup>rd</sup> Edition. JNCC, Peterborough.
- NCC (1990) *Handbook for Phase 1 Habitat Survey* JNCC Peterborough
- Oldham R.S., Keeble J., Swan M.J.S. & Jeffcote M. (2000). *Evaluating the suitability of habitat for the Great Crested Newt* (*Triturus cristatus*). *Herpetological Journal* 10 (4), 143-155
- Preston C.D., Pearman D.A. & Dines T.D. (2002) *New Atlas of the British and Irish Flora* Oxford University Press
- Stace C.(2010) *New Flora of the British Isles* 3<sup>rd</sup> edition Cambridge University Press
- Stott, M. *et al* (2002) *The Breeding Birds of Cumbria: a tetrad atlas 1997-2001*. Cumbria Bird Club
- [www.magic.gov.uk](http://www.magic.gov.uk) (Information on priority habitats, species and protected sites)
- [www.jncc.defra.gov.uk](http://www.jncc.defra.gov.uk) (Information on legal framework, BAP species and habitats)
- Natural England Species Information Note SIN006 (2011) *Otter- European Protected Species* [www.publications.naturalengland.org.uk](http://www.publications.naturalengland.org.uk)

## **APPENDICES**



Figure 2: Habitat map



Contains OS data © Crown copyright and database rights 2020, Licence No - OS 100041041 (via Blackwells online).

## Survey target notes

Refer to figure 2 for locations of target notes.

No.	Description
1	UKHab: u1a Spoil/ rubble pile. Sparse ground flora, planted with young trees and fenced. Species include hazel <i>Corylus avellana</i> , dog rose <i>Rosa canina</i> , birch <i>Betula sp</i> , hawthorn <i>Crataegus monogyna</i> , blackthorn <i>Prunus spinosa</i> and alder <i>Alnus sp</i> . See image 2.
2	UKHab: h3h Dense self-seeded young trees and scrub including sycamore <i>Acer pseudoplatanus</i> , hazel, ash <i>Fraxinus excelsior</i> , willows <i>Salix sp</i> , birch, bramble <i>Rubus fruticosus</i> and buddleia <i>Buddleia sp</i> .
3	UKHab: u1a Open area of tipped material and rubble in varying stages of re-vegetation. Small areas of calcareous grassland with lady's mantle <i>Alchemilla sp</i> , wood sage <i>Teucrium scorodonia</i> , common dog violet <i>Viola riviniana</i> , bugle <i>Ajuga reptans</i> and wild strawberry <i>Fragaria vesca</i> . Scattered scrub – hawthorn, elder <i>Sambucus nigra</i> , sycamore, willow, bramble and buddleia. Other areas quite bare or with scattered open ground species such as coltsfoot <i>Tussilago farfara</i> , teasel <i>Dipsacus fullonum</i> , buddleia and willow scrub. See image 3.
4	UKHab: h3h Dense scrub, predominantly buddleia. Some willow and bramble. See image 5.
5	UKHab: u1a Spoil/ rubble pile. Sparse ground flora, planted with young trees, unfenced. Species include hazel, alder, willow, holly <i>Ilex aquifolium</i> , rowan <i>Sorbus aucuparia</i> , and dogwood <i>Cornus sanguinea</i> . See image 4.
6	UKHab: u1a Open spoil/ tipped material. Very sparse vegetation – likely recent disturbance. Some white clover <i>Trifolium repens</i> and teasel establishing, and fescue grass <i>Festuca sp</i> . See image 6.
7	UKHab: w1f Semi natural broadleaf woodland, priority habitat. Birch, ash and sycamore frequent.
8	UKHab: w1f Semi-natural woodland, part of Leapers Wood, Bowman Stout Wood and Slack Wood BHS. Some limestone pavement evident under the canopy. Woodland flora, very diverse- best quality to the west of this compartment. Species include dog's mercury <i>Mercurialis perennis</i> , wood anemone <i>Anemone nemerosa</i> , lesser celandine <i>Ficaria verna</i> , primrose <i>Primula vulgaris</i> , bluebell <i>Hyacinthoides non-scripta</i> , ground ivy <i>Glechoma hederacea</i> and tufted hair grass <i>Deschampsia cespitosa</i> . Canopy of ash, sycamore, wych elm and birch with hawthorn, hazel & some larch <i>Larix sp</i> . See image 8.
9	Small sump or settling pond. No vegetation, just silt with small amount of standing water. See image 9.

10	UKHab: w1f Similar woodland to note 8, though no obvious limestone pavement seen. Some mature horse chestnut <i>Aesculus hippocastanum</i> and field maple <i>Acer campestre</i> trees noted. Ancient woodland, and part of Leapers Wood...BHS
11	Recently worked over area, bare ground with no vegetation.
12	UKHab: g2a5 Grassy track to the south of the woodland (unshaded), though partially obscured by scrub in places. No particular management, but kept open by walking, light deer and rabbit grazing and proximity to edge of quarry cliffs.
13	Lots of dead and unhealthy mature trees in the southern 10-30m of the woodland. Ash in particular, but also birch, sycamore and cherry. Possibly as a result of several hot and/or dry springs, underlying geology and exposure to the sun may have caused this dieback and exacerbated ash dieback in susceptible trees. See image 10.
14	UKHab: s1d Quarry cliffs, exposed limestone rock (not pavement). Good nesting habitat for raptors and corvids. No peregrine falcon seen – though known to nest on this side of the quarry on occasion. Several corvids (probably jackdaw) active in this area, possibly nesting. Cliffs in this area relatively undisturbed, tall, with good ledges and relatively unvegetated – offering good nesting habitat for peregrine falcon. See image 9.
15	Single badger hole with paths in several directions. No signs of recent use, but clear entrance.
16	UKHab: w1f Planted deciduous woodland. Sycamore and ash canopy all similar age, many looking unhealthy/ dead (see note 13). Regenerating sycamore, ash, hawthorn, elder and beech <i>Fagus sylvaticum</i> . Lesser celandine along path and dense raspberry <i>Rubus idaeus</i> in understorey.
17	UKHab: w1f Deciduous woodland on steep bank. Mature ash and sycamore dominate canopy – many part dead. Celandine on steep banks and clear badger/ mammal paths.
18	Badger sett. 2 clear entrances, paths well used going up and down bank. Outlier or satellite sett.
19	UKHab: w1f Slacks Wood - Deciduous woodland, ancient woodland site, part of Leapers Wood...BHS. Ground flora typical of woodland including dog's mercury, ramsons <i>Allium ursinum</i> , primrose etc Limestone rock outcrops. Open understorey below ash, oak <i>Quercus sp</i> , sycamore and wych elm canopy. Many sick ash trees.
20	Badger holes, several partially covered, 2 open/ clear. Another under old stone wall, and another 3 holes within 10m. Some paths and tracks.
21	Main sett. 8 holes. Clear paths and disused bedding around entrances. Well established, lots of clear areas around the sett. Some disused holes. See image 11.
22	UKHab: w1f Bowman Stout Wood, part of Leapers Wood...BHS. Deciduous mixed woodland re-planted on ancient woodland site. Ash, sycamore, wild cherry <i>Prunus avium</i> , birch, wych elm, hazel and some larch. Ground flora quite grassy with tufted hair grass and wood false brome <i>Brachypodium sylvaticum</i> , as well as lesser celandine and wood anemone.

## **Description of Wildlife Law and Legislation referred to in this document**

### **National Planning Policy Framework (2018)**

Current guidance recommends that planners ensure that all new developments:

- minimise impacts on biodiversity and protected sites
- result in a local net gain in biodiversity
- safeguard wildlife-rich habitat and wider ecological networks
- promote conservation/ restoration and enhancement of priority habitats and ecological networks
- promote protection/ recovery of priority species

### **Nesting birds**

Under Section 1 of the Wildlife and Countryside Act 1981 (as amended), wild birds are protected from being killed, injured or captured. Under this legislation their nests and eggs are also protected from being damaged, destroyed or taken (this includes nests in the process of being built as well as those with eggs and/or chicks in).

Birds which are listed in Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) are protected by special penalties at all times. Further enforcement has been provided by The Countryside and Rights of Way Act 2000.

### **Bats**

Bats have declined in numbers dramatically across the UK and Western Europe in recent decades. Key factors linked to their decline are loss of roosting places due to building works and woodland destruction. Other factors implicated in their decline are changes in the countryside resulting in habitat loss and greater fragmentation of foraging habitats, and severing of commuting flightlines due to transport developments and hedgerow destruction.

As a consequence of these significant declines, bats and their roosts are protected under British and European law. All bats are listed under Annexe IV of the EU Habitats Directive, and some under Annexe II. This law is transposed into English law into the Conservation of Habitats and Species Regulations (2010). Bats are also protected in the UK under the Wildlife and Countryside Act 1981 (as amended).

As a result of the above legislation it is an offence to;

- Deliberately capture, injure or kill a bat,
- Disturb a bat such that their survival, reproductive capacity, or the well being of the local population is affected
- Intentionally or recklessly disturb a roosting bat, or block access to its roost.

### **Reptiles**

The four widespread species of reptile (common lizard, slow-worm, grass snake and adder) receive partial protection under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) in respect of Section 9(5). It is an offence to intentionally kill, injure, sell, or to advertise for sale, any of these species without an appropriate licence. Further enforcement has been provided by The Countryside and Rights of Way Act 2000.

### **Amphibians**

The four widespread species of amphibian (common frog, common toad, smooth newt and palmate newt) receive partial protection under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) in respect of Section 9(5). It is an offence to sell or possess (dead or alive) these species. Further enforcement has been provided by The Countryside and Rights of Way Act 2000.

Great crested newts are a European Protected Species, and their breeding sites or resting places are protected under Regulation 41 of the Conservation of Habitats and Species Regulations 2010 and Section 9 of the Wildlife and Countryside Act 1981. It is an offence for anyone intentionally to kill, injure or disturb a great crested newt, to possess one (whether live or dead), or sell or offer for sale without a licence. It is also an offence to damage, destroy or obstruct access to any place used by great crested newt for shelter.

### **Badger**

Badger is a protected species under the Protection of Badgers Act 1992 which makes it an offence to wilfully kill, injure, take, possess or cruelly ill-treat a badger, or to attempt to do so; or to recklessly interfere with a sett. Further enforcement has been provided by The Countryside and Rights of Way Act 2000.

Guidance as to best working practices around badger setts have been developed, to minimise disturbance to these animals.

### **Biodiversity Action Plans – Species and Habitats**

The UK Biodiversity Action Plan (UK BAP) was published 1994, in response to the Convention on Biological Diversity (CBD), which the UK signed up to in 1992 in Rio de Janeiro. National and Local action plans were developed for the most threatened species and habitats. The plans, and species and habitats to which they related are reviewed and updated regularly. The current lists can be found on the JNCC website. These have now been succeeded by NERC Act 2006 (see below) but are still commonly used for guidance.

### **Natural Environment and Rural Communities (NERC) Act 2006**

Section 41 of the NERC Act 2006 requires the Secretary of State to publish a list of habitats and species which are of principal importance for the conservation of biodiversity in England. The list has been drawn up in consultation with Natural England, as required by the Act. This purpose of this list is to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under section 40 of the Natural Environment and Rural Communities Act 2006, to have regard to the conservation of biodiversity in England, when carrying out their normal functions.

56 habitats of principal importance are included on the S41 list. These are all the habitats in England that were identified as requiring action in the UK Biodiversity Action Plan (UK BAP) and continue to be regarded as conservation priorities in the subsequent UK Post-2010 Biodiversity Framework. There are 943 species of principal importance included on the S41 list. As above, these are the species found in England which were identified as requiring action under the UK BAP and which continue to be regarded as conservation priorities under the UK Post-2010 Biodiversity Framework.



## Photographs (All images taken April 2021)



Photo 1.  
Cliffs at the north-west edge of the quarry near the quarry offices. Planted trees and patchy scrub above.



Photo 2.  
Looking north over the planted trees along the quarry access road. Ground flora very limited.

See note 1.



Photo 3.  
Open mosaic habitat on previously tipped material and rubble. Mixture of ephemeral species, developing grassland, remnant woodland flora and patchy scrub.

See note 3.





Photo 4.  
Looking west over  
tree planting and  
established  
woodland.

See note 5.



Photo 5.  
Dense buddleia  
scrub at the south-  
western edge of the  
quarry boundary.

See note 4.



Photo 6.  
Sparsely vegetated  
scree/ tipped material  
near the access road.

See note 6.





Photo 7.  
Small sump/ settling pool adjacent to the access road. Not considered likely to support breeding amphibians.

See note 9.



Photo 8.  
Woodland to west of quarry access road, part of Leapers Wood, Bowman Stout Wood and Slack Wood BHS. Some remnant limestone pavement.

See note 8.



Photo 9.  
Upper section fo the cliffs at north-east corner of the quarry, which look suitable for peregrine falcon nesting. (lower section obscured by platform of bare ground in foreground)

See note 14.





Photo 10.  
Dead and dying trees  
along the south  
facing edge of the  
woodland by the  
steep cliffs.

See note 13.



Photo 11.  
Badger main sett and  
extensive activity in  
Bowman Stout  
Woods.

See note 21.

## HSI calculation for settling pool at Leapers Wood Quarry

Pond ref	Leapers Wood	2	3	4	5
SI1 - Location	1				
SI2 - Pond area	0.1				
SI3 - Pond drying	1				
SI4 - Water quality	0.33				
SI4 - Shade	1				
SI6 - Fowl	1				
SI7 - Fish	1				
SI8 - Ponds	0.1				
SI9 - Terr'l habitat	0.67				
SI10 - Macrophytes	0.3				
HSI	0.48				
Pond ref					
SI1 - Location					
SI2 - Pond area					
SI3 - Pond drying					
SI4 - Water quality					
SI4 - Shade					
SI6 - Fowl					
SI7 - Fish					
SI8 - Ponds					
SI9 - Terr'l habitat					
SI10 - Macrophytes					
HSI					
<p>Comments and constraints on Habitat Suitability Index data for this project (if appropriate). If                      Categorisation of HSI scores: HSI &lt;0.5 = poor; HSI 0.5-0.59 = below average; HSI 0.6-0.69 =                      average; HSI 0.7-0.79 = good; HSI &gt;0.8 = excellent.</p>					