

Appendix A
Heaton's
EIA Scoping Report

EIA Scoping Report

Request for EIA Scoping Opinion

Deepening of Quarry Operations and Extension of Time
for Quarrying and Restoration Operations

at

Leapers Wood Quarry,
Kellet Road, Carnforth, LA6 1BP

on behalf of



September 2021

H e a t o n s
Planning Environment Design

CONTENTS

1	INTRODUCTION	1
1.1	Background	1
1.2	Approach	1
2	THE SITE	2
2.1	Site Location	2
2.2	Site Context	2
3	DESCRIPTION OF PROPOSED DEVELOPMENT	4
3.1	Existing Operations.....	4
3.2	Proposed Operations.....	4
4	ENVIRONMENTAL IMPACT ASSESSMENT	5
4.1	EIA Regulations.....	5
4.2	EIA Objectives.....	5
4.3	EIA Approach.....	6
5	POTENTIAL ENVIRONMENTAL EFFECTS	9
5.1	Introduction	9
5.2	Landscape and Visual	9
5.3	Ecology and Biodiversity.....	15
5.4	Soils	18
5.5	Geology and Water Environment.....	18
5.6	Transport.....	23
5.7	Noise	25
5.8	Groundborne Vibration and Air Overpressure	25
5.9	Air Quality and Dust	26
5.10	Cultural Heritage	26
6	OTHER CONSIDERATIONS.....	28
6.1	Socio Economics.....	28
6.2	Climate Change	28
6.3	Need.....	28
6.4	Human Health	30
6.5	Recreation	30
6.6	Risk of Accidents.....	30
6.7	Alternatives	30

6.8	Cumulative Impacts.....	30
6.9	Mitigation and Monitoring	31
7	COMMUNITY ENGAGEMENT	32
8	SUMMARY	33
8.1	Proposed Development.....	33
8.2	Proposed Environmental Statement	33
8.3	Proposed Planning Application.....	33

DRAWINGS

TAR-132-M.D.001 – Site Location

TAR-132-M.D.002 – Current Situation

TAR-132-M.D.003 – Proposals Plan

APPENDIX

Appendix 1 – Preliminary Ecological Appraisal (South Lakes Ecology)

Revision	Author	Checked by	Date
A	JAC	CS	18 June 2021
B		CS	6 September 2021
C		CS	15 September 2021
D		CS	16 September 2021

1 INTRODUCTION

1.1 Background

- 1.1.1 This Scoping Report has been prepared on behalf of Tarmac Trading Ltd (the applicants), to seek a formal Scoping Opinions from Lancashire County Council (LCC) as to the scope of Environmental Impact Assessment (EIA) required in support of a planning application for the deepening of quarry operations at Leapers Wood Quarry (the site).
- 1.1.2 Leapers Wood Quarry has been operating for many years and is one of a very limited number of quarries able to meet the carboniferous limestone aggregate demand of the north-west England market. The quarry produces a high-grade limestone aggregate, the supply of which is critical in facilitating the construction of strategic projects throughout the region.
- 1.1.3 The site is regarded as a strategic supplier of high-grade aggregate, the long-term security of which is essential to ensure that large scale schemes in the region have a reliable local source of quality aggregate into the future. It is therefore essential that the long-term plans for the site are considered at an early stage to ensure that the resource available is not unnecessarily sterilised or compromised.
- 1.1.4 The applicants intend to undertake an Environmental Impact Assessment and produce an Environmental Statement in support of the planning application. The applicants therefore wish to seek the formal views of the Local Planning Authority, by way of requesting an EIA Scoping Opinion, as to the potential scope of assessments required.
- 1.1.5 The request for a Scoping Opinion is made under Regulation 15 of The Town and Country Planning (Environmental Impact Assessment) Regulations 2017.

1.2 Approach

- 1.2.1 It is intended to submit a planning application to propose the deepening of quarry operations to a depth of -37mAOD and an extension of time for the quarrying operations to continue until 31 December 2065, with restoration being completed a year later, by 31 December 2066.
- 1.2.2 This EIA Scoping report details the application site, provides a description of the proposed development, giving consideration to the potential associated environmental effects and outlining the scope of assessment proposed.

2 THE SITE

2.1 Site Location

- 2.1.1 The site location is shown on drawing TAR-132-M.D.001. The current situation at the site is shown on drawing TAR-132-M.D.002. Finally, the proposed extraction depths and extent are shown on drawing TAR-132-M.D.003.
- 2.1.2 Leapers Wood Quarry is located within Lancaster City Council authority area, lying to the south-east of Carnforth in Lancashire. The site lies immediately adjacent (to the north) of Back Lane Quarry operated by Aggregate Industries (AI). The site is otherwise bounded to the north, east and west by an extensive woodland belt.
- 2.1.3 Carnforth is the nearest major settlement to the site, the town centre of which lies around 1.5km west of the site. Further afield, Lancaster city centre lies 8.5km to the south of the site.
- 2.1.4 Access to Leapers Wood Quarry is via Kellet Road to the north of the quarry. The dedicated site access road provides immediately access to the A601(M), some 70m to the west of the quarry access, which then provides onward access to the M6 and A6.

2.2 Site Context

- 2.2.1 The site lies immediately adjacent to the north of Back Lane Quarry. The sites are operated independently but their phased working and subsequent restoration are interrelated.
- 2.2.2 The northern boundary of the site consists of a woodland belt made up of Leapers Wood, Bowman Stout Wood and Slacks Wood (around 100m wide) beyond which are agricultural fields separating the quarry area from the settlement of Over Kellet (around 500m away). Leapers Wood is classified as Ancient & Semi – Natural Woodland, Bowman Stout Wood is Ancient Replanted Woodland and Slacks Wood is also Ancient & Semi – Natural Woodland.
- 2.2.3 To the south of the site, beyond Back Lane Quarry, there are agricultural fields leading down to Back Lane, Main Road, Hawthorns Caravan Park and the village of Nether Kellet.
- 2.2.4 To the west of the site is a belt of woodland which screens the site from the M6 which runs in a north / south direction. To the east of the quarry is Kit Bill Wood, an Ancient and Semi-Natural Woodland covering 4.86 ha.

- 2.2.5 The nearest residential areas to the extraction area lie around 600m to the west on the edge of Carnforth, beyond the M6. Nether Kellet village lies some 900m to the south of the quarry at its nearest point.
- 2.2.6 There are a number of Listed Buildings within 2km of the site, the closest of which is Grade II* listed Church of St Cuthbert, around 430m to the east. The nearest cluster of listed buildings are within the village of Over Kellet around 500m north-east of the site.
- 2.2.7 There are two Sites of Special Scientific Interest (SSSI) within 2km of the site. Crag Bank SSSI is a 3.7 ha biological designation located around 1.9km to the west of the site. Thwaite House Moss SSSI is a 7.25 ha biological designation approximately 1.2km to the south-west of the site.
- 2.2.8 The Forest of Bowland Area of Outstanding Natural Beauty (AONB) and the Arnside and Silverdale AONB lie around 1.7km to the east and 1.8km to the west respectively.

3 DESCRIPTION OF PROPOSED DEVELOPMENT

3.1 Existing Operations

- 3.1.1 The site is accessed along a dedicated access road from Kellet Road. Current sales from the site are around 800,000 tonnes per annum (tpa).
- 3.1.2 The current permission for the site restricts working to a maximum depth of 38mAOD via planning condition.
- 3.1.3 The existing permission also limits the timescales for extraction and restoration of the site to 19 September 2048 and 19 September 2049 respectively.
- 3.1.4 Taking the current depth restriction into account, the existing remaining reserve has been calculated to be around 10 million tonnes (mt), equating to 12.5 years supply at current extraction rates. However, this includes reserve held within the joint boundary with Back Lane Quarry. If the boundary reserve is not able to be worked as part of a joint operation with Back Lane Quarry, then Leapers Wood Quarry has remaining reserves of only 7mt (8.75 years supply at current extraction rates).

3.2 Proposed Operations

- 3.2.1 It is proposed to submit a planning application to seek permission for extraction of limestone to a depth of -37mAOD. The proposed deepening of the quarry would release a further 24mt of mineral. This tonnage is dependent upon joint boundary working between Leapers Wood and Back Lane.
- 3.2.2 The existing annual sales from the site of approximately 800,000 tpa would remain unchanged. It would therefore also be necessary to seek permission for an extension to the extraction period and final restoration date of the site. Assuming that the existing extraction rate is maintained and that the site is worked in conjunction with the adjacent Back Lane Quarry, this would require an extension to the extraction period until 31 December 2065, with restoration by 31 December 2066.
- 3.2.3 The annual output of the quarry (and therefore the average daily HGV movements) would be maintained and existing hours of operation would remain as approved. No new infrastructure is proposed on site as part of the proposals and access arrangements would remain as permitted. No other changes are proposed as part of the application.

4 ENVIRONMENTAL IMPACT ASSESSMENT

4.1 EIA Regulations

- 4.1.1 The need for an Environmental Impact Assessment (EIA) is considered under the terms of the Town and County Planning (Environmental Impact Assessment) Regulations 2017 (the Regulations).
- 4.1.2 The proposed development would fall within Paragraph 13(a) (Changes and extensions) of Schedule 2 of the Regulations. Paragraph 13(a) covers any change to or extension of Schedule 1 development where that development is already authorised, executed or in the process of being executed. The proposed development therefore requires Screening for Environmental Impact Assessment if i) the development as changed or extended may have significant adverse effects on the environment; or ii) the thresholds identified within Paragraph 2(a) – Quarries – are met or exceeded.
- 4.1.3 The application site is not located within a ‘sensitive area’, as defined in Regulation 2(1) of the EIA Regulations. Guidance for determining whether a proposal is EIA development is provided in National Planning Practice Guidance: Environmental Impact Assessment to aid local planning authorities to determine whether a project is likely to have significant environmental effects. This includes ‘Annex: indicative screening thresholds’ which states are “indicative only and are intended to help determine whether significant effects are likely”.
- 4.1.4 Given the scale of the proposals in terms of the significant deepening of the site and the proposed volume of material to be quarried, it is considered that the proposals should be classed as EIA Development. It is therefore proposed that the planning application would be accompanied by an Environmental Statement.

4.2 EIA Objectives

- 4.2.1 The overall aim of the proposed EIA is to provide an objective and systematic account of any significant environmental effects from the development and to assess the ability of the development site and the surrounding area to accept those impacts. The EIA scoping process is an essential part of ensuring that the objectives of EIA are met.

4.3 EIA Approach

4.3.1 In order to ascertain the likely scope of the EIA, the EIA scoping process has involved the following steps:

- Identification of the site boundaries;
- Identification of the key characteristics of the development site and the establishment of the broad environmental baseline;
- Identification of gaps in the baseline and the further survey work likely to be required;
- Broad consideration of the potential sources and nature of environmental impacts; and
- Outline of the scope and methodology of impact assessments to be applied.

4.3.2 As part of the EIA scoping process, issues that are identified as unlikely to give rise to significant environmental effects can potentially be omitted (scoped out) from the EIA, providing this is justified in the relevant topic chapter of this report. In some cases, it may also be reasonable to propose a much reduced or brief scope of other environmental topic areas.

4.3.3 The ES produced will assume that all legislative requirements and statutory design guidelines will be met. Therefore, any standard guidance which is provided to ensure minimum legal compliance is not considered to constitute 'additional mitigation' in this EIA and will not be taken into account as such.

4.3.4 The EIA will cover the physical extent of the site as shown on the accompanying drawings. It is defined by the area of land to be used, the nature of the current environmental conditions and the manner in which impacts are likely to be generated. It is important to note however that the influence of many predicted impacts can extend beyond the immediate site boundary, for example, the effects on some species that are primarily located off-site but which may use the site for foraging. Where identified and relevant, these impacts will also be assessed within the EIA.

4.3.5 The potential cumulative effects of the development in association with other developments will be included where relevant as required by Schedule 4, Part 1, Paragraph 5 of the EIA Regulations.

4.3.6 A review of the residual impacts presented within the ES will be undertaken, along with an exercise which tabulates the impacts against receptors to identify the potential for impact interactions and combined cumulative effects. Only residual impacts classified as being of minor, moderate or major significance will be considered in relation to the

potential for the combined effects of individual impacts. Residual impacts of negligible significance will be excluded from the assessment of the combined effects of individual impacts as by virtue of their definition, they are considered to be imperceptible impacts.

- 4.3.7 Where there is more than one impact on a particular receptor, the potential for impact interactions will be determined. If there is the potential for impact interactions then consideration will be given as to whether there is the potential for any resultant combined cumulative effects. Combined cumulative impacts will then be presented within the relevant ES chapters.
- 4.3.8 Each individual chapter within the subsequent ES will consider the attributes of specific receptors in detail.
- 4.3.9 Magnitude of effect will be determined by predicting the scale of any potential change in the baseline conditions. The assessment of magnitude is carried out considering any 'design mitigation', i.e. relevant design features in the proposal forming part of the development description. This may result in the need for 'additional mitigation' i.e. that which results from the EIA process, to reduce impacts further.
- 4.3.10 Magnitude will be defined within each chapter along a sliding scale. Typical terms used to determine magnitude include substantial, moderate, slight, negligible and no impact.
- 4.3.11 To determine the significance of effect, the predicted magnitude of impact (change) is combined with the sensitivity (value) of the receptor.
- 4.3.12 The definition of the level of significance at which point a significant impact arises will be provided within the topic method section of each chapter of the ES. This is important in the context of the EIA Regulations which in Schedule 4, Part 1, Paragraph 5 require a description of the likely significant effects of the development which should cover the direct effects and any indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative effects of the development. Therefore, environmental effects will be described as:
- Adverse or beneficial;
 - Direct or indirect;
 - Temporary or permanent;
 - Short, medium or long term;
 - Reversible or irreversible; or
 - Cumulative.

4.3.13 Each effect will have a source originating from the development, a direct pathway and a receptor. Effects which operate this way are regarded as direct effects. Effects on other receptors via subsequent pathways will be regarded as indirect effects.

4.3.14 ES chapters will consider the nature of effects and significance of effects and their definitions in more detail as required. An example of a typical significance of effect matrix is set out below.

		Magnitude of Impact			
		Substantial	Moderate	Slight	Negligible
Sensitivity of Receptor	Very High	Major	Major	Major / Intermediate	Neutral
	High	Major	Major / Intermediate	Intermediate / Minor	Neutral
	Medium	Major	Intermediate	Minor	Neutral
	Low	Intermediate / Minor	Minor	Neutral	Neutral

TABLE 1: Example significance of effect matrix

5 POTENTIAL ENVIRONMENTAL EFFECTS

5.1 Introduction

5.1.1 The following sections of this report set out the principal environmental considerations that are considered to be relevant to the proposed development. The potential extent of any effect and detail of the scope of work that is proposed to be undertaken as part of the Environmental Impact Assessment is described.

5.1.2 The principal potential environmental effects that could result from a development such as that proposed are identified below:

- Landscape and Visual;
- Ecology and Biodiversity;
- Geology and Water Environment;
- Transport;
- Noise;
- Groundborne Vibration and Air Overpressure;
- Air Quality and Dust; and
- Cultural Heritage.

5.2 Landscape and Visual

Existing Baseline

5.2.1 The site is not located within a nationally designated landscape e.g. National Park or Area of Outstanding Natural Beauty (AONB). However, the site is located around 1.8km to the south and east of Arnside / Silverdale AONB and around 1.7km to the west of the Forest of Bowland AONB. Given a combination of positioning and elevations, the site may have the potential to fall within the visual envelope of the designated AONB areas.

5.2.2 There are several areas in the vicinity of the wider site that are subject to Limestone Pavement Orders. There are also areas of Ancient Woodland and Priority Habitat Inventory – Deciduous Woodland, as well as good quality semi-improved grassland.

5.2.3 Areas of Leapers Wood, Bowman Stout Wood and Slacks Wood are also protected by a Tree Preservation Order.

5.2.4 Other designations that lie within a 2km radius of the site and which may be affected by the development include:

- Thwaite House Moss SSSI located around 1.2km to the south-west of the quarry and Crag Bank SSSI approximately 1.9km to the west (Morecambe Bay SSSI is located further afield some 2.3km to the west);
- Listed Buildings located in the local villages of Nether Kellet, Over Kellet, Birkland Barrow and within Carnforth; and
- North Nether Kellet and Over Kellet Conservation Areas.

Landscape Character

5.2.5 Landscape Character is described at three levels within this section – these being National Level, County Level and Local / Site Level in order to fully appreciate its component elements, features, interactions and susceptibility to change.

National Level

5.2.6 The site is located to the boundary of the Morecambe Coast and Lune Estuary 31 National Character Area and the Morecambe Bay Limestones 21 National Character Area, as defined by Natural England.

County / Local Level

5.2.7 At a local level, A Landscape Strategy for Lancashire - Landscape Character Assessment (2000) defines the site as being located within proximity to Landscape Character Area 13c: Drumlin Field - Docker-Kellet-Lancaster, Landscape Character Area 12a: Low Coastal Drumlins - Carnforth-Galgate-Cockerham and 12b Low Coastal Drumlins – Warton-Borwick and as such it is considered that the proposed development may influence these defined character areas.

Character Type 13: Drumlin Field - Character Area 13c: Docker-Kellet-Lancaster

5.2.8 This Drumlin Feld character type is described as being *“a distinctive landscape type characterised by a ‘field’ of rolling drumlins. The consistent orientation of the hills gives the landscape a uniform grain, which is sometimes difficult to appreciate from within the field. The regular green hillocks are between about 100m and 200m high with steep sides and broad rounded tops. However, there are often solid rock outcrops within the field where the underlying bedrock is exposed. Drumlin Fields occur inland, on higher land than the Low Coastal Drumlins. They are found on the edges of upland areas where the retreating ice sheets left moulded boulder clay deposits in their paths. Low Coastal Drumlins are found on the north-west coast of the study area where the last retreating ice sheets left a series of rounded boulder clay hills in their paths.”*

5.2.9 In more detail Character Area 13c is described as a drumlin field having, *“a distinctive north-east, south-west grain and runs from the edge of Lancaster northwards into*

Cumbria. The area is underlain by limestone and is distinguished by large scale undulating hills of pasture, some formed from glacial till and others which are outcrops of limestone, or reef knolls. These are particularly evident around Over and Nether Kellet where the limestone is exposed; significantly by the extensive quarries where limestone extraction is ongoing. The smooth rolling scenery is emphasised by the network of stone walls. Greater variety of texture is provided by the isolated areas of moorland which protrude from the field, for example at Docker Moor, and the River Lune which cuts a gorge through the hills at Halton. This gorge provides a major transport route through the hills with a number of parking, picnic and camping sites scattered along its length. Woodlands are often associated with designed landscapes and built development takes advantage of views from the hill tops, for example the Ashton Memorial on the edge of Lancaster which sits atop a drumlin and is a landmark for miles around. The drumlins create a setting for the city of Lancaster and its university.”

Landscape Character Area 12a: Carnforth-Galgate-Cockerham

5.2.10 This character area is described as comprising, *“Areas of low, whaleback hills around 40m high, with broad rounded tops towards the north-west coast of the study area. The landscape is characteristically gentler and of lower altitude than that of the Drumlin Field and individual drumlins are more isolated; there are often areas of poorly drained pasture, standing water and occasionally mosses, fens and fen meadows between the drumlins. Trees and shrubs are limited in this agricultural landscape, although small copses occur on the tops and sides of the drumlins. Minor roads and the canal wind around the drumlins while overhead powerlines and major transport routes typically cut across these areas, paying no attention to the natural landform. Coastal cliffs of boulder clay are significant features where the drumlin landscape meets the sea. Low Coastal Drumlins are found on the north-west coast of the study area where the last retreating ice sheets left a series of rounded boulder clay hills in their paths.”*

5.2.11 Key characteristics of this landscape character area are as follows:

- Landform: Drumlins provide elevated viewpoints to Morecambe Bay / low whaleback hills;
- Landcover: Small woodland plantations. Improved pasture. Areas of poorly drained pasture between the drumlins. Limited trees and shrubs, some small copses. Hill top copses;
- Complexity/ Pattern: The alignment of the drumlins gives the landform a distinctive grain. Strong pattern – neat, low cut hedges. Enclosure Acts created distinctive regular, hedged enclosures;

- Built Environment: Extremely high proportion of built development. Convenient north-south transport corridor. To west of Cockerham settlement is sparse – large scattered farmsteads;
- Settings: Low whaleback hills;
- Designated scenic quality: Small part in AONB; and
- Cultural associations: Canal is reminder of industrial heritage.

Landscape Character Area 12b: Warton-Borwick

5.2.12 This character area is described as follows:

“The Low Coastal Drumlins around Warton are more rural in character than those immediately to the south. Large pastures are divided by low clipped hedgerows or stone walls, some of which are degraded or missing. There are areas of waterlogged, rushy pasture and standing water in the low lying areas between the drumlins. The River Keer winds its way between the low drumlins, draining into Morecambe Bay at Carnforth. Historic Halls and estates are associated with the River Keer at Capernwray and Borwick. Gravel extraction has had an impact on this landscape in the creation of open water bodies which attract wildfowl. The largest of these is Pine Lakes. There is considerable development associated with the M6, A6 and railway such as motels and a lorry park. Parking areas and caravan sites are also features of coastal parts of this area.”

Immediate location – Site and Surroundings

5.2.13 Areas of historic extraction and ongoing operations occupy much of the current site, which is now disturbed to near its full permitted extent. This internal quarry landscape comprises a combination of quarry benches and faces, access ramps and haul routes, operational water bodies / lagoons and ancillary built structures and quarry plant / machinery, along with mineral stocks and waste tips.

5.2.14 The site, whilst situated on elevated ground, is generally well contained by mature structural boundary woodland belts which occupy the rising limestone slopes, beyond which the surrounding landscape is typically agricultural (pastoral), topographically representing a distinctive rolling drumlin landscape before become flatter as land falls northward and westwards towards the coastline. Field parcels are typically irregular, being defined by a combination of hedgerows, stone walls and occasional small mixed woodland blocks.

5.2.15 The M6 motorway corridor dissects the landscape north to south within close proximity to the west of the site. Elsewhere, local roadways serve the settlements of Carnforth, Over Kellet and Nether Kellet.

5.2.16 Both operational and historic mineral workings are typical features within the surrounding landscape. Dunald Mill Quarry lies to the south of Nether Kellet and a number of other historic workings in the area have been restored to leisure / recreation afteruses.

5.2.17 The local landscape is well served by public rights of way and cycles routes – the closest being footpaths 1-24-FP-7 which runs to the north-east of the site.

Potential Effects

5.2.18 An initial baseline understanding of the site has been undertaken taking into account both desktop and previous site surveys in order to establish the site's potential general visual envelope.

5.2.19 The existing quarries' main visual components include the access road and Heavy Good Vehicle (HGV) movements, higher elevated rock faces and benches, previous tip landforms, the quarry plant / buildings and concrete block works (specifically from the public right of way (PROW) to the south, and the potential views of dust from quarry operations.

5.2.20 The types of visual receptors include residents (e.g. within Carnforth), users of PROW and greenspaces / public open spaces, and users of the local road network, including Kellet Road and the M6 motorway. Views changing based upon elevation, fixed or transitory, topography, orientation, distance and site / local vegetation cover.

5.2.21 These elements combine to prevent potential receptor views from the north and north-east, restrict potential views from the south-east and south-west, and limit potential/principal receptor views located to the north-west of the site. Distance, however, starts to limit the magnitude of the effect of the quarry operations and landform from this area.

Scope of Assessment

5.2.22 The Landscape and Visual chapter will comprise a Landscape and Visual Impact Assessment (LVIA) which will assess the likely effects of the proposed mineral extraction and progressive restoration of the site to water based wildlife and potential recreation lake / landuses (the proposed development) on Landscape Character and Visual Amenity.

5.2.23 The aim of the assessment will be to understand the baseline landscape and visual resources and receptors within the site / local area and to assess their value and sensitivity to change, resulting from the proposed development type. From this

baseline position, the LVIA will assess the specific magnitude of effect of the detailed development proposed on landscape and visual resources / receptors including iterative consideration, landscape mitigation and enhancement measures, and to determine the Level of Significance of Effect on Landscape and Visual matters (which could potentially be adverse or beneficial).

5.2.24 The LVIA will be undertaken with reference to best practice guidance, as set out in the following documents:

- Guidelines for Landscape and Visual Impact Assessment, 3rd Edition, 2013 (GLVIA3); Landscape Institute/Institute of Environmental Management and Assessment;
- An Approach to Landscape Character Assessment, Natural England (2014);
- Landscape Institute Advice Note 1/11 Photography and Photomontages Guidance; and
- Landscape Institute Technical Guidance Note 02/17 (March 2017), Visual Representation of Development Proposals.

5.2.25 The study will include baseline and development assessment of landscape character and quality, sensitivity and capacity to integrate and absorb the proposed development activities. Works will also involve the consideration of individual visual receptors and zones of visual influence associated with the scheme, with assessment taking place both in terms of potential zones and individual receptors. An analysis of the scheme's accordance with landscape orientated policies will also be carried out with suggested potential mitigation and enhancement measures in respect of landscape and visual aspects.

5.2.26 Cumulative visual effects can be caused by combined visibility, which occurs where the observer is able to see two or more developments from one view point and/or sequential effects which occur when the observer has to move to another view point to see different developments (SNH,2012:II).

5.2.27 Cumulative effects can impact on either the physical fabric or character of the landscape or any special values attached to it. The potential intervisibility of the development, with development of a similar scale and nature will be reviewed within the context of potential cumulative effects associated with the proposed development.

5.3 Ecology and Biodiversity

5.3.1 A Preliminary Ecological Appraisal (PEA) has been carried out at Leapers Wood Quarry to inform this Scoping Report. An assessment of the site was carried out by consultants at South Lakes Ecology in April 2021.

5.3.2 The Preliminary Ecological Appraisal has been provided as Appendix 1 of this report.

5.3.3 The survey conducted consisted of a Desktop Study, Habitat Survey, Protected Species Survey and Invasive Species Survey.

Desktop Study

5.3.4 A total of 11 protected and statutory sites were identified within 5km of the site and are outlined in Table 1 of the PEA. In addition, 26 non-statutory sites and notable habitats were located within 2km of the site (15 were in 1km of the site and 1 within the site boundary), these can be found in Table 2 of the PEA.

5.3.5 A search of the Lancashire Environmental Records Network provided the records of rare, scarce, protected and alien species within 2km of the quarry. This provided over 3000 results, information for which the species of conservation concern have been provided in Table 3 of the PEA.

Habitat Survey

5.3.6 Within the survey area a total of 7 habitats were found. They consist of the following:

- w1f Lowland mixed deciduous 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

5.3.7 Detailed descriptions of these habitats are provided in section 3.2 of the PEA.

Protected and Notable Species Survey

5.3.8 Protected and Notable Species are categorised into Birds, Reptiles, Amphibians, Bats, Terrestrial Mammals and Other Species. Detailed information on all of these categories can be found in section 3.3 of the PEA.

5.3.9 The survey confirmed that, within 50m of the proposed works, there were nesting birds within the woodland / scrub and also badger setts and signs of foraging.

5.3.10 The potential for protected and notable species within 50m of the site was identified during the survey, as shown within Table 2 below:

Potential Protected and Notable Species	Likelihood
Breeding amphibians in the settling pool (common toad and newts - including great crested newt)	Low
Cliff nesting birds (i.e peregrine falcon)	Moderate – high
Ground nesting birds (i.e oystercatcher)	Low – moderate
Roosting bats within rock faces and fissures	Low
Invertebrates of interest around open mosaic habitat and limestone grassland	Moderate – high

TABLE 2: Potential for protected and notable species

5.3.11 Looking further afield there is likely extensive badger activity as noted during the survey around Leapers Wood, with foraging routes identified through the woodland areas. This includes potential quarry road crossing route to the east of the Back Lane Quarry offices. There is also evidence of bat roosting in the local area, it is therefore likely that they roost / forage within the adjacent woodland and surrounding quarry area. It is worth noting that none of the buildings on site were of particular suitability for roosting bats.

Invasive Species Survey

5.3.12 No notable invasive species were recorded.

Conclusions

5.3.13 It is concluded that the proposed operations at Leapers Wood Quarry will not have any specific impacts on the local ecology as it involves deepening the existing quarry void rather than extending into the land surrounding the working area which is where nearest ecological interests are found. It is considered that significant environmental effects in terms of ecology are not likely.

5.3.14 Section 4 of the PEA provides a detailed conclusion of impacts to Habitats, Birds, Reptiles & Amphibians, Terrestrial Mammals & Bats and Invertebrates.

Recommendations

5.3.15 A summary of the recommendations to mitigate and enhance ecology and biodiversity is provided below.

Recommended mitigation for ecological impacts not requiring further survey

5.3.16 Regarding nesting birds on the cliff faces, it is proposed to adopt and follow a protocol for avoidance of disturbance to breeding raptors on quarry faces throughout operations, particularly within the breeding season (March – July). The location of Peregrine Falcons should be identified in spring each season and 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 nests as the quarry develops and different areas become suitable for breeding.

5.3.17 For nesting birds in vegetative areas, it is proposed that 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.

5.3.18 Collaboration with Back Lane Quarry is encouraged to make an overarching protocol for the whole quarry void as the birds are likely to move nests as the quarry develops and different areas become suitable for breeding.

Recommended enhancements to encourage biodiversity net gains

5.3.19 As the limestone grassland on site currently has no ecological value, it is suggested to produce a management strategy for the limestone grassland to preserve and enhance the habitat.

5.3.20 It is also suggested to install 20 bird boxes and 10 bat boxes of varying types in the woodland (especially plantation woodland) to provide additional nesting habitat for woodland birds and roosting sites for bats.

5.3.21 In summary, it is not proposed that any further surveys are required. Therefore, subject to implementing the recommendations detailed within the PEA, it is proposed that ecology and biodiversity are scoped out of the Environmental Statement. Notwithstanding this, ecology and biodiversity will be considered within the Planning Supporting Statement.

5.4 Soils

Existing Baseline

- 5.4.1 The proposals would not result in any soils being removed or new areas of soil stripping. Existing soils retained on site will be managed as currently approved and will be used in the longer term restoration of the site.

Scope of Assessment

- 5.4.2 Given that there would be no changes relating to soils from the proposals, it is suggested that further consideration of soils is not required within the Environmental Statement and should be scoped out.

5.5 Geology and Water Environment

Regional Geology

- 5.5.1 The regional geology comprises a vertically extensive sequence of sedimentary strata of Carboniferous age which are overlain by superficial deposits. The majority of the solid geology can be sub-divided into limestone strata, which are of Lower Carboniferous (Dinantian) age, and a sequence of grits and shales, which are of Upper Carboniferous (Silesian) age.
- 5.5.2 Sedimentary strata of Permian and Triassic Age belonging to the Appleby and Cumbrian Coast Groups occur in the west of the region. A summary of the regional solid geology is given in Table 3 below.
- 5.5.3 The solid geology is almost entirely obscured by an extensive spread of superficial deposits which are principally of glacial origin. Till is the most persistent deposit, however areas of gravels also occur. Drumlins occur extensively in the areas where till predominates, their orientation reflecting the direction of ice movement, which was broadly southwards within the region.

3095/SR/T1: Regional solid geology			
Age	Stage	Formation	Description
Triassic		Cumbrian Coast Group	Grey siltstones and dolomites, overlain by red siltstones, mudstones and calcareous sandstones with evaporites
Permian		Appleby Group	Red sandstones with subordinate to mudstones, siltstones, carbonates and evaporites
Upper Carboniferous	Silesian	Pendle Grit Formation	Vertically extensive sequence of thick, massive sandstones separated by sub-ordinate sandy shales
		Upper Bowland Shale	Well-bedded, laminated, black shales
Lower Carboniferous	Dinantian	Gleaston Formation / Lower Bowland Shale	Mixed sequence of dark mudstones, thinly bedded dark limestones and sandstones
		Urswick Limestone	Alternating sequences, 3 to 4 m thick, of pale brown, massive, thickly bedded grainstones and mottled grey to pale brown packstones
		Park Limestone	Massive, largely dolomitised and the bedding is poorly defined

TABLE 3: Summary of Regional Solid Geology

Local geology

- 5.5.4 Details of the local geology have been determined from mineral evaluation borehole records, published data and inspection of exposed faces within both Back Lane and Leapers Wood Quarries.
- 5.5.5 The majority of the area in the vicinity of both quarries is overlain by glacial till. However, the till is absent in the area immediately to the north of the Back Lane Quarry void. Spreads of glacial sand and gravel occur on the areas of lower elevation to the west of the M6 Motorway, the closest such deposits are situated some 400m to the west of the quarry void.
- 5.5.6 The principal solid lithologies in the immediate vicinity of the quarry comprise limestone and are sub-divided into the Park and overlying Urswick Formations. The Park Limestone Formation is generally described as massive, partly dolomitised and with bedding that is poorly defined.

- 5.5.7 The Upper Park Limestone was taken to be between the base of the lowest correlatable dolomitic horizons and the mapped boundary of the Urswick Limestone. The Upper Park Limestone and dolomites are estimated to be approximately 25m thick.
- 5.5.8 The Urswick Limestone Formation consists predominantly of alternating sequences, 3 to 4m thick, of pale brown, massive, thickly bedded grainstones and mottled grey to pale brown packstones. Interspersed within the two principal facies are bands of carbonate mudstones and wackestones, bentonitic clays and limestone conglomerates. The Triple Rubbly Band, a 3m sequence of interbedded, rubbly limestone and clayey mudstone is locally present. The upper boundary of the formation is taken as the point where the predominantly pale, thickly bedded, Urswick Limestone passes upwards into the Gleaston Formation.

Methodology

- 5.5.9 The objectives of this Scoping Report are to define the baseline conditions of the water environment and environmental setting at the site and the surrounding area.
- 5.5.10 The response from the regulators to the content of this scoping request will inform the Hydrogeological Impact Assessment (HIA) and Flood Risk Assessment (FRA) for the planning application. The magnitude and significance of potential impacts of the proposed quarry deepening and the proposed subsequent restoration on the water environment and environmental setting will be identified and investigated within HIA and FRA reports at the planning application stage.
- 5.5.11 A very large volume of data exists relating to the geology and water environment in the vicinity of the quarry. Groundwater level data from the limestone bedrock has been collated from numerous boreholes since 1993, together with hydrogeological assessments, which have investigated a range of issues at the site and its environs. There is, therefore, a good baseline of understanding for future assessment. The HIA and FRA will be informed by the current detailed understanding of the extant water environment.

Existing Baseline

Hydrology and ecology

- 5.5.12 The quarry is situated within the catchment of the River Keer, which approaches to within 1.6km to the north-west of the site. The river flows generally westwards and discharges into Morecambe Bay, approximately 1km to the west of Carnforth. The closest watercourse to the quarry, the Nether Beck, a tributary of the River Keer, is

located on the opposite side of the M6 Motorway and originates from a spring situated some 200 m to the south-west of the site boundary.

- 5.5.13 The whole of the quarry is located in Flood Zone 1, and therefore has a less than 1 in 1000 year probability of flooding, as designated by the Environment Agency.
- 5.5.14 Two Sites of Scientific Interest (SSSI) occur within a 2km search radius of the site, both located to the west of the site; Thwaite House Moss SSSI and Crag Bank SSSI.

Geology

- 5.5.15 The regional geology comprises a vertically extensive sequence of sedimentary strata of Carboniferous age, which are overlain by superficial deposits. The majority of the solid geology can be sub-divided into limestone strata, which are of Lower Carboniferous (Dinantian) age, and a sequence of grits and shales, which are of Upper Carboniferous (Silesian) age. The solid geology is almost entirely obscured by an extensive spread of superficial deposits which are principally of glacial origin. Details of the local geology are known from mineral evaluation borehole records, published data and inspection of exposed faces within the quarry void.
- 5.5.16 The principal solid lithologies in the immediate vicinity of the quarry comprise limestone and are sub-divided into the Park and overlying Urswick Formations. The Park Limestone Formation is generally described as massive, partly dolomitised and with poorly defined bedding. The Urswick Limestone Formation consists predominantly of alternating sequences, 3 to 4m thick, of pale brown, massive, thickly bedded grainstones and mottled grey to pale brown packstones.
- 5.5.17 Published data, experience of mineral operators and a direct observation area indicates the presence of cave development within the limestones. Relict cave features exposed within quarries are generally clay-filled and situated at varying elevations, including some significantly higher than the current water table. It is clear that the local karst system is complex; conduits are likely to vary in size spatially, bifurcate and then rejoin other features throughout the mass of the limestone.

Hydrogeology

- 5.5.18 The limestone bedrock extracted at the site is classed by the Environment Agency as a Secondary 'A' Aquifer.
- 5.5.19 Groundwater flow, and groundwater seepages, within the limestone are controlled by the connectivity and aperture of the limestone fracture network. Major groundwater flow paths are likely to be associated with the karst system within the local area, which has the potential to transmit and store large volumes of water.
- 5.5.20 Groundwater level data from the limestone bedrock has been collated from numerous boreholes since 1993. Recorded groundwater elevations are highest in the east and decrease westwards, indicating a westerly groundwater flow direction.

Current water management

- 5.5.21 Mineral extraction is currently conducted below the water table and quarry dewatering has been undertaken since 2002. Water from groundwater ingress and incident rainfall currently drain to a sump within the western extent of the quarry void for settlement, prior to being pumped up the western quarry face to the consented discharge location at a sinkhole.

Scope of Assessment

- 5.5.22 The proposed Planning Application is to secure additional reserves by deepening the quarry to -37mAOD. This will require on-going dewatering to allow safe and dry extraction of the limestone below the water table.

Flood risk

- 5.5.23 The application area is located in Flood Zone 1. However, as the site is greater than 1 hectare (ha) in extent, a Flood Risk Assessment is required to comply with the National Planning Policy Framework (NPPF).
- 5.5.24 The flood risk to and from the proposed development will be assessed with reference to EA and Local Authority guidance, including consideration of the impact from climate change on the duration and intensity of storm rainfall events. This assessment will include consideration of any surface water management within the site, and the water management associated with quarry dewatering. Mitigation, should it be required, will be identified.

Hydrogeological

- 5.5.25 A Hydrogeological Impact Assessment will be undertaken which will address the potential impacts of the quarry deepening, and the required dewatering, upon local surface water and groundwater resources and water-supported features.
- 5.5.26 Continuation of the current water management system is proposed. The sustainability of this system for the duration of the quarry lifetime and the predicted future dewatering requirement will be assessed. If the disposal of water off-site was proposed, the potential impacts to extant environments would be considered.
- 5.5.27 The potential for impact of the proposed development upon designated water-supported features and the extant water environment will be assessed by reference to the baseline data, the developed Conceptual Hydrogeological Model, and a series of matrices developed to ensure a rigorous and consistent approach to the assessment of potential impacts. Mitigation measures, should they be required, will be proposed where appropriate.

5.6 Transport

Existing Baseline

- 5.6.1 Leapers Wood Quarry currently has annual sales of around 0.8 million tonnes of carboniferous limestone.
- 5.6.2 The quarry is accessed via a dedicated road to the north, on to Kellet Road (B6254).

Potential Effects

- 5.6.3 The proposed deepening of the site would unlock additional reserves for the quarry. However, this will not increase the rate of output of mineral from the site and therefore vehicle movement numbers would remain as existing.
- 5.6.4 Vehicles exit onto Kellet Road before joining the strategic road network (A601(M) / M6 / A6). Therefore, the impacts of this development would be assessed for the local highway network and the strategic highway network.
- 5.6.5 The transport section of the EIA will assess the traffic impact on both the local and strategic highway network.

Scope of Assessment

- 5.6.6 It is proposed to undertake a Transport Assessment (TA). The TA will be prepared in accordance with the Ministry of Housing, Communities and Local Government (MHCLG) Planning Practice Guidance.
- 5.6.7 Where available, existing traffic data will be obtained from Lancashire County Council. If no existing data is available, new surveys will be undertaken by a specialist survey sub-contractor.
- 5.6.8 Leapers Wood Quarry and Back Lane Quarry adjacent are both seeking permission simultaneously and therefore will both require a TA. New traffic surveys are proposed on B6254 (Kellet Road), B6254 / M6 link junction road and the M6 Junction 35.
- 5.6.9 The surveys will need to be undertaken during school term times if reliable data is to be obtained. Furthermore, it should also be noted that the ongoing situation in relation to COVID-19 means it may not be possible to carry out new surveys if traffic patterns are not considered to be representative of typical conditions. There is some uncertainty about when traffic patterns will become normalised post COVID-19. Liaison with LCC will be undertaken in this instance to establish an appropriate solution.
- 5.6.10 The distribution of trips routing to or from the site will be identified to understand which roads these trips are most likely to choose in making their journeys and assess the impact of the development to these roads through assessment of the change of traffic flow at the abovementioned junctions.
- 5.6.11 Vehicle trip generation (daily and peak hour) will be estimated. It is proposed to seek to agree a bespoke trip generation methodology with the Highway Authority and then estimate the number of development trips based on the amount of material to be exported from the site and typical vehicle load carrying capacity.
- 5.6.12 The degree of background traffic growth from 2021 to 2026 will be calculated.
- 5.6.13 The extent to which the traffic generation represents a material increase in traffic activity on the local highway network will be assessed. The peak hours of operation of the development are likely to be outside of the typical highway peak periods.
- 5.6.14 The suitability of the site access junction will be assessed. This will include a review of road safety issues, visibility splays and junction capacity.
- 5.6.15 The 5 year collision history for the existing highway will be obtained. This will be analysed, plotted and summarised to identify any road safety issues that may affect or be affected by the proposed development.

5.6.16 Committed developments and highway schemes that could have a material effect on transport conditions in the vicinity of the site will be researched. Any likely transport effects from such developments will be identified.

5.7 Noise

Existing Baseline

5.7.1 Current noise levels from the site are controlled by conditions 20 to 25 of the 2005 ROMP (01/03/1185). Noise levels must not exceed 55dB LAeq(1 hour) when measured from the following properties, as stipulated by condition 21:

Green Meadow
Raisbeck
94 Windermere Road
Kirk House
Helks Wood Farm

5.7.2 A Noise Monitoring Scheme is in place as per the requirements of condition 25.

Potential Effects

5.7.3 It is considered that the existing noise control measures which have been implemented by the applicant will ensure that any future residual noise impact is adequately mitigated.

Scope of Assessment

5.7.4 An assessment will be prepared setting out the existing methods and procedures adopted by the applicant to minimise the impact of noise arising from the existing operations.

5.8 Groundborne Vibration and Air Overpressure

Existing Baseline

5.8.1 Current blasting operations at the application site fully comply with the extant planning permission condition limits.

Potential Effects

5.8.2 With the exercise of reasonable engineering control over general site operations, the proposed site development will be able to be worked within the existing blast vibration criteria which it is proposed will be applied for all mineral extraction operations.

Scope of Assessment

- 5.8.3 An assessment will be prepared setting out the existing methods and procedures adopted by the applicant to minimise the impact of groundborne vibration and air overpressure arising from the existing operations.

5.9 Air Quality and Dust

Scope of Assessment

- 5.9.1 A dust and air quality impact assessment will be undertaken to support the application.
- 5.9.2 The assessment will be in accordance with the recommendations established in Institute of Air Quality Management 'Guidance on the Assessment of Mineral Dust Impacts for Planning', 2016 and assessments for nuisance dusts and PM₁₀ will be undertaken for potentially sensitive receptors within 400 metres of the application site. Receptors beyond 400 metres will be screened out in accordance with the guidance.
- 5.9.3 The assessment shall also incorporate a period of monitoring to establish existing baseline levels of nuisance dusts and PM₁₀.
- 5.9.4 The scope of the assessment may be subject to some modification on publication of the forthcoming Environment Bill.

Traffic Related Air Quality

- 5.9.5 Given that the proposed levels of output would remain as existing there would therefore be no increase in daily HGV movements, it is proposed to scope out the need to undertake an assessment of traffic related air quality.

5.10 Cultural Heritage

- 5.10.1 A number of listed buildings lie within a 2km radius of the site. The closest of these is the Grade II* listed Church of St Cuthbert around 430m to the east of the site. The nearest large cluster of listed building assets are within the village of Over Kellet, approximately 500m north-east of the site where there are a total of 24 listed buildings.

Potential Effects

- 5.10.2 Visually, listed buildings which are north, east and west of the site will have no line of sight into the quarry due to the dense woodland which wraps these boundaries. The quarry operations are well established and the proposals to deepen the workings would not result in any fundamental changes that would be likely to impact upon heritage assets or their setting over and above the existing baseline. It is therefore considered

that significant effects on cultural heritage assets are unlikely to result from the proposals.

Scope of Assessment

5.10.3 It is proposed that cultural heritage is scoped out from the EIA as no significant effects would be likely to result from the proposals upon heritage assets.

6 OTHER CONSIDERATIONS

6.1 Socio Economics

6.1.1 Consideration will be given to socio-economic effects, including the likely levels of employment and other economic benefits associated with the proposed continuation of limestone winning and supply from the site at the local and regional level.

6.2 Climate Change

6.2.1 Tarmac have fully committed to supporting the UK's ambition of net-zero carbon emissions by 2050 and are making progress across the business and supply chain, using a whole life-cycle approach to design CO₂ out of products and services. This includes working with suppliers to reduce CO₂ from the goods and services Tarmac purchase, cutting CO₂ from operations and transport, innovating lower CO₂ products, services and solutions that reduce CO₂ from the construction process or during the use of infrastructure and buildings.

6.2.2 To ensure that climate change effects are fully considered, potential effects will be assessed within individual topic areas. A chapter will also be included within the ES to assess any potential over-arching effects related to climate change.

6.3 Need

Overview

6.3.1 The quarry produces a high-grade limestone aggregate which is critical in supplying construction projects throughout the region. Examples of recent and ongoing larger scale projects include sea defence schemes (Rossall), strategic transport links (Windy Harbour link road, Heysham link road, Penwortham bypass and the Preston West Distributor Road (PWDR) which is currently undergoing construction).

6.3.2 The site supplies stone to ReadyMix concrete suppliers throughout the north-west and supports numerous housing, infrastructure, commercial and industrial schemes in the region.

6.3.3 From the above it is clear that the site is of regional strategic significance in facilitating major construction projects. It is therefore essential that the continued supply of high quality limestone aggregate within the north-west is properly planned for and that the potential reserves at the site are maximised into the future at an early stage.

Aggregate Supply

- 6.3.4 Lancashire County Council's Local Aggregate Assessment (LAA) considers the supply and demand for limestone crushed rock within the region. The latest available report produced in 2019, using 2018 data, states that there were 52.68 million tonnes of limestone reserves with planning permission, with those reserves being held in 6 quarries – Back Lane, Leapers Wood, Bankfield, Lanehead, Dunald Mill and Bellman Quarries. It is noted within the LAA that it is possible that a number of the sites will not be worked out before the expiry of their planning permission.
- 6.3.5 Of the six existing limestone quarries identified within Lancashire, only Back Lane and Leapers Wood are likely to remain in production beyond 2027. Dunald Mill is currently mothballed and unlikely to be worked for a number of years. However, the Lancashire Mineral Plan includes an allocation for the extension and deepening of Dunald Mill in the longer term.
- 6.3.6 The NPPF confirms that, “it is essential that there is a sufficient supply of minerals to provide the infrastructure, buildings, energy and goods that the country needs. Since minerals are a finite natural resource, and can only be worked where they are found, best use needs to be made of them to secure their long-term conservation”.
- 6.3.7 It is therefore important that the continued steady and adequate provision of aggregates is planned for within the County. The potential for new limestone aggregate quarries in the north-west is very limited for the foreseeable future, particularly given the need to, as far as practical, provide for the maintenance of landbanks of such minerals from outside National Parks and Areas of Outstanding Natural Beauty – designations which cover large areas to the north into Cumbria, to the east in the Forest of Bowland AONB and to some extent further west into the Arnside and Silverdale AONB. If sufficient landbanks of limestone supply were not secured, this could lead to reliance on imports from distant counties such as Derbyshire which would clearly not be either economically or environmentally sustainable.
- 6.3.8 In summary, as other sites within the County, along with those within Cumbria and the National Parks to the north, approach the end of their life over the next few years, it will be essential for the County to maintain regional limestone supply.
- 6.3.9 The issue of need for the mineral and the proposed development will be set out in full within the Planning Statement but will also be considered within the ES.

6.4 Human Health

6.4.1 Human health will be considered within specific topic chapters as appropriate.

6.5 Recreation

6.5.1 There are no points of public access into the site at Leapers Wood. A Public Footpath (PROW ref: 1-24-FP 7) runs north to south along the eastern side of Kit Bill Wood, east of Leapers Wood Quarry reaching Main Road. Here it runs adjacent to Main Road before heading east to west (PROW ref: 1-22-FP 5) across the agricultural fields to the south of Back Lane Quarry. The potential amenity effects on rights of way users (e.g. potential visual, noise and dust effects) will be addressed within the Environmental Statement and also, where relevant, considered within other technical assessments referred to above.

6.6 Risk of Accidents

6.6.1 The risk of major accidents and disaster will be considered within the EIA where relevant.

6.7 Alternatives

6.7.1 As set out in paragraph 041 (Reference ID: 4-041-20170728) of Planning Practice Guidance (PPG), the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 do not require an applicant to consider alternatives. However, where alternatives have been considered, paragraph 2 of Schedule 4 requires the applicant to include in their Environmental Statement a description of the reasonable alternatives studied (for example in terms of development design, technology, location, size and scale) and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.

6.7.2 It is proposed that the Environmental Statement will include a description of any alternative working areas and methods that are considered during the process. The Environmental Statement will indicate the main reasons for the choice of the final option and comparison of the associated environmental effects.

6.8 Cumulative Impacts

6.8.1 The Environmental Impact Assessment will consider the cumulative effects taking into account the operation of the adjacent Back Lane Quarry and other relevant existing and/or approved projects, taking into account any existing environmental problems

relating to areas of particular environmental importance likely to be affected or the use of natural resources.

6.9 Mitigation and Monitoring

- 6.9.1 Technical assessments will identify any necessary mitigation and if there may be a need for specific ongoing monitoring. A summary of all mitigation measures and monitoring requirements will be provided within the Environmental Statement.

7 COMMUNITY ENGAGEMENT

- 7.1.1 Government guidance contained in the NPPF identifies the importance of involving the community on an iterative basis.
- 7.1.2 The applicants will engage initially with members of the site's long established liaison group to establish the proposed scope of the process. It is likely that consultation with the wider local community will take place through a public exhibition within Over Kellet. This will provide an opportunity for the local community to make comment on the initial proposals and feed into the scheme that is submitted.
- 7.1.3 A Statement of Community Involvement will be prepared to accompany the planning application.

8 SUMMARY

8.1 Proposed Development

8.1.1 It is intended to submit a planning application to propose the deepening of quarry operations to a depth of -37mAOD and an extension of time for the quarrying operations to continue until 31 December 2065, with restoration being completed a year later, by 31 December 2066. The proposed deepening of the existing quarry would result in the release of a further 24mt of limestone.

8.1.2 The application would be accompanied by an Environmental Statement, along with a comprehensive Planning Statement and additional supporting information as identified below.

8.2 Proposed Environmental Statement

8.2.1 It is proposed that the Environmental Statement will cover the following topic areas:

- Landscape and Visual
- Geology
- Water Environment
- Transport
- Noise
- Groundborne Vibration and Air Overpressure
- Air Quality and Dust
- Alternatives
- Climate Change
- Cumulative and In-Combination Effects
- Socio Economics
- Human Health (where relevant to above topics)

8.2.2 It is proposed to scope out the following topic areas from the Environmental Statement:

- Ecology and Biodiversity
- Soils
- Heritage

8.3 Proposed Planning Application

8.3.1 In addition to the Environmental Statement, it is proposed to provide additional information in support of the planning application as below:

- Preliminary Ecological Appraisal
- Flood Risk Assessment (also included within ES)
- Planning Statement including planning policy, environmental considerations and need for the development

Drawings

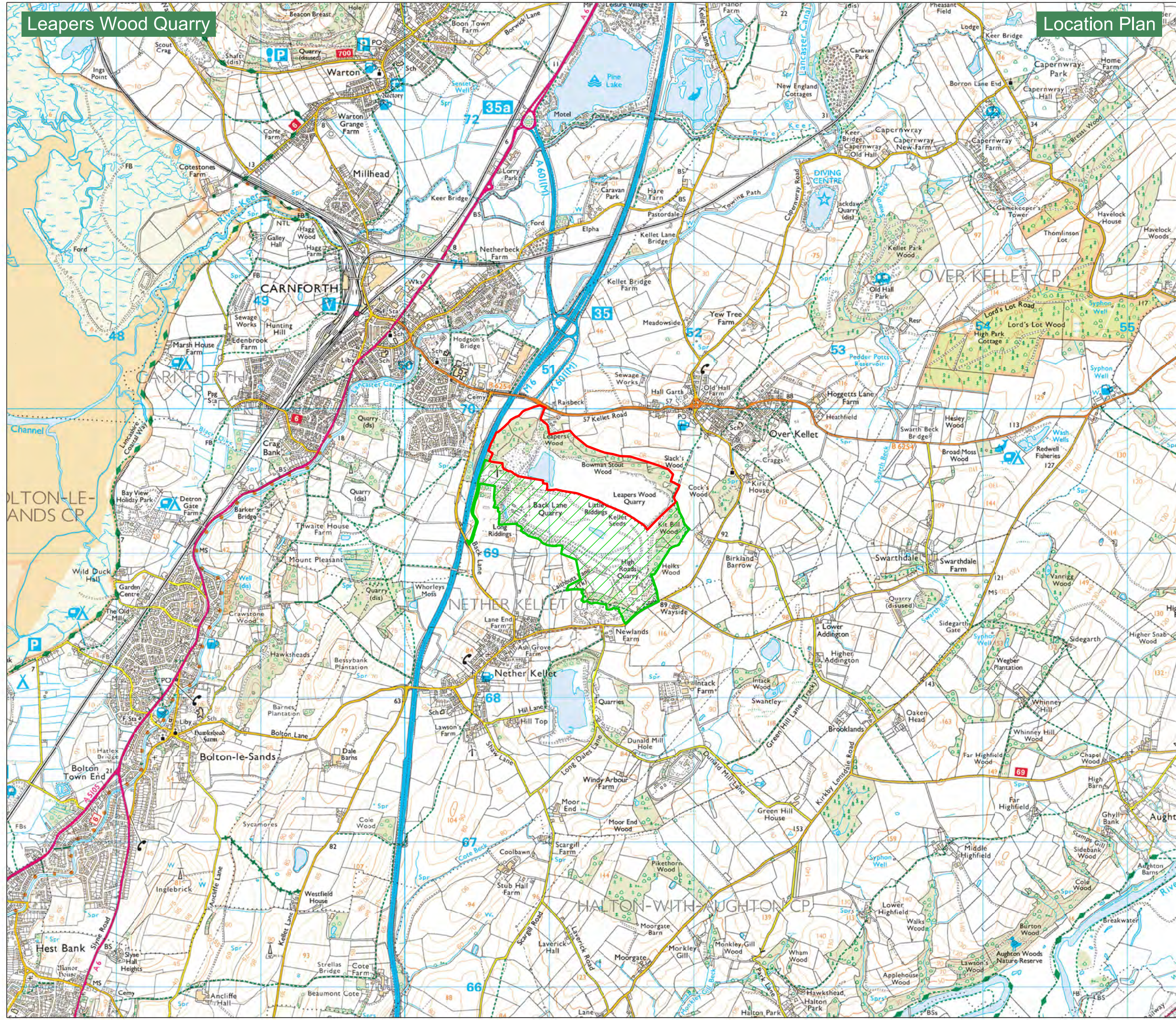
TAR-132-M.D.001 – Site Location

TAR-132-M.D.002 – Current Situation



TAR-132-M.D.003 – Proposals Plan

Leapers Wood Quarry

Location Plan



LEGEND

-  Site Boundary
-  Back Lane Quarry

Heatons

Planning Environment Design

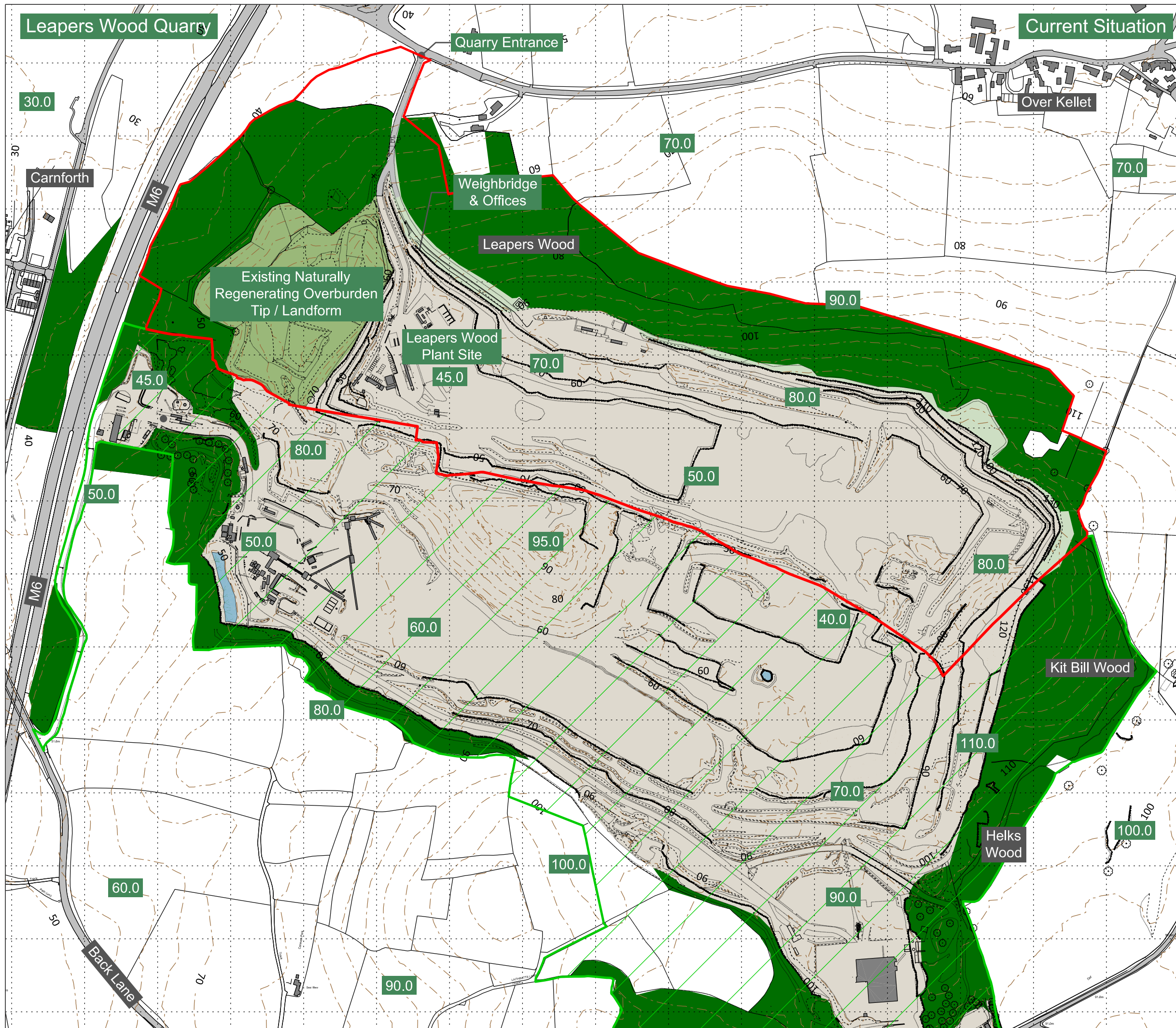
PROJECT
Leapers Wood Quarry

DRAWING TITLE
Location Plan








DATE: Sept 2021
REFERENCE: TAR-132-M.D.001

SCALE: 1:25,000 @ A3
STATUS: FINAL





LEGEND

-  Application Boundary
-  Back Lane Quarry
-  Surrounding Woodland
-  Buildings & Roads
-  Disturbed Land - Leapers Wood & Back Lane Quarries
-  Existing Overburden Tip / Landform
-  Contours (5m Intervals) & Spot Heights (m AOD)

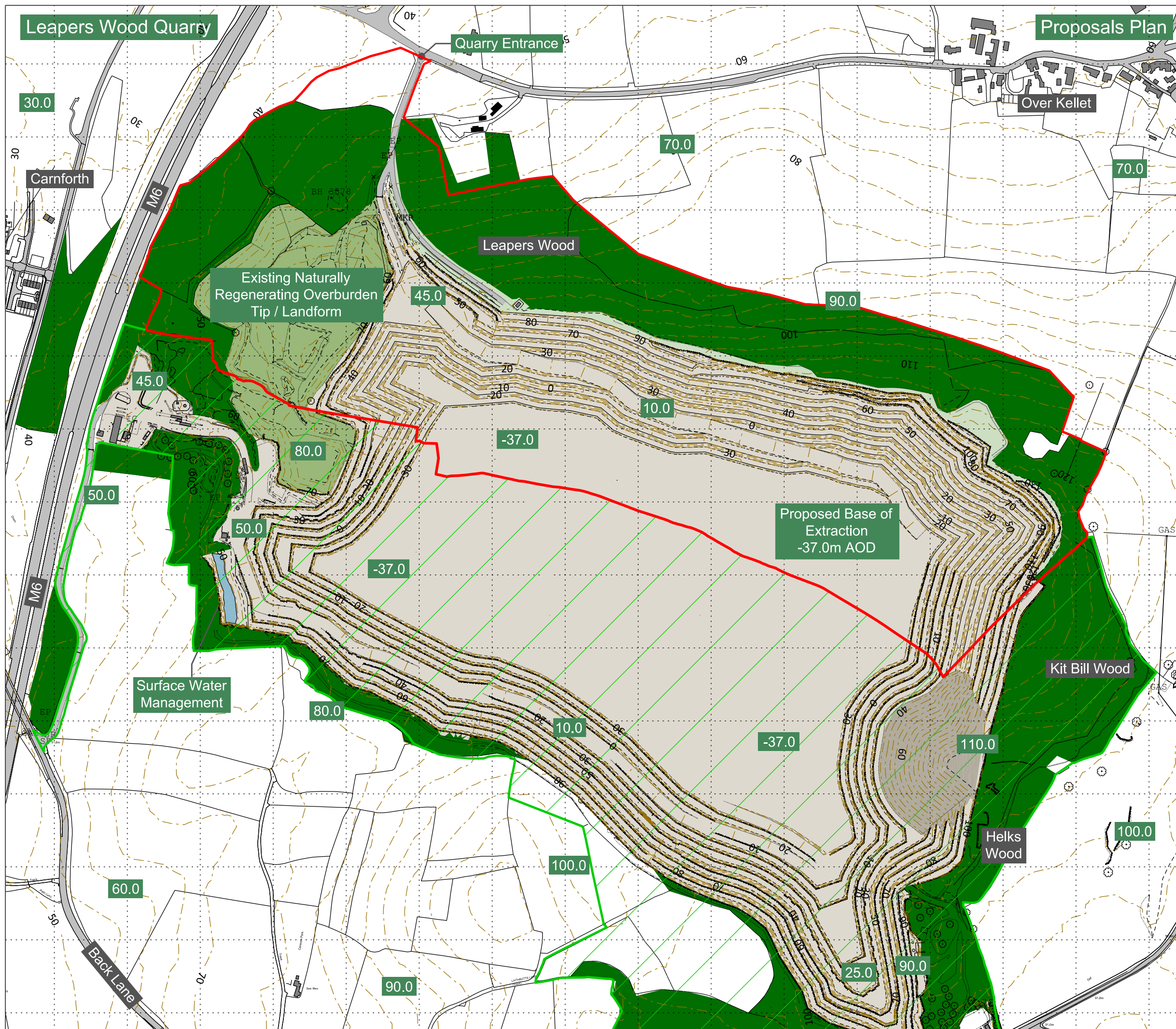


PROJECT
Leapers Wood Quarry



DRAWING TITLE
Current Situation

DATE	REFERENCE
Sept 2021	TAR-132-M.D.002

	SCALE
	1:5,000 @ A3
	STATUS
	FINAL



LEGEND

-  Application Boundary
-  Back Lane Quarry
-  Surrounding Woodland
-  Buildings & Roads
-  Proposed Extent of Operational Land / Mineral Extraction
-  Existing Overburden Tip / Landform
-  Proposed Overburden Tip / Landform
-  Contours (5m Intervals) & Spot Heights (m AOD)

NOTE. This drawing illustrates the proposed full footprint and depth of extraction.



PROJECT
Leapers Wood Quarry

DRAWING TITLE
Proposals Plan

DATE: Sept 2021
REFERENCE: TAR-132-M.D.003

SCALE: 1:5,000 @ A3
STATUS: FINAL



Appendix 1

Preliminary Ecological Appraisal (South Lakes Ecology)

Preliminary Ecological Appraisal

Leapers Wood Quarry, Nether Kellet

29th April 2021

Report 0421/5

Report commissioned by;

Clive Saul

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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 a protected species data search were undertaken to establish species and habitats present on and in the near vicinity of the quarry.

A total of 7 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.

None of these habitats or the BHS are likely to be negatively affected by the proposed deepening of quarry activity.

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; widespread nesting bird species in the woodland, scrub and hedgerows, badger setts and foraging activity, roosting bats in woodland, and widespread invertebrate species. None of these are likely to be directly impacted by the proposals as they are outwith the active working area of the quarry.

Within the active quarry the cliffs could potentially be used by notable nesting birds such as peregrine falcon, raven and kestrel. Peregrine falcon regularly nest within the quarry void- and though the nesting site was not identified during this fieldwork, it is believed to be in the north-eastern corner of Leapers Wood Quarry.

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. 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 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).

No further ecology surveys are required for these proposals. Some mitigation measures have been included specifically related to nesting birds (especially peregrine falcon – as this species is known to nest within the quarry void and will move nesting site depending on quarrying activity and habitat as the quarry develops).

Compensation and enhancement measures have been included to ensure that there are some biodiversity gains on the site. These include preparation and initiation of Buddleia control to ensure that this non-native shrub does not displace native wildflowers and scrub in open mosaic habitats and woodland edge. Also recommended is the installation of 20 nesting boxes and 10 bat boxes of varying sizes in the woodland to the north of the quarry.

Contents

1. INTRODUCTION	4
1.1 The aim of the survey	4
1.2 Proposed works	4
1.3 The survey area	4
2. SURVEY METHOD	5
2.1 Desktop study	5
2.2 Habitat survey	5
2.3 Protected species survey	5
2.4 Invasive species survey	6
2.5 Survey constraints	6
3. BASELINE ECOLOGICAL CONDITIONS	7
3.1 Desktop survey results	7
3.2 Habitat survey results	10
3.3 Protected and notable species survey results	13
3.4 Invasive species survey results	15
4. SURVEY CONCLUSIONS	16
5. SURVEY RECOMMENDATIONS	17
5.1 Further Survey	17
5.2 Mitigation	17
5.3 Enhancements for gain of biodiversity	17
6. REFERENCES	18
APPENDICES	
Figure 2: Habitat Map –.....	20
Target notes.....	21
Legal context and descriptions.....	23
Photographs.....	25
Habitat Suitability Index (HSI) calculations table.....	29

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).

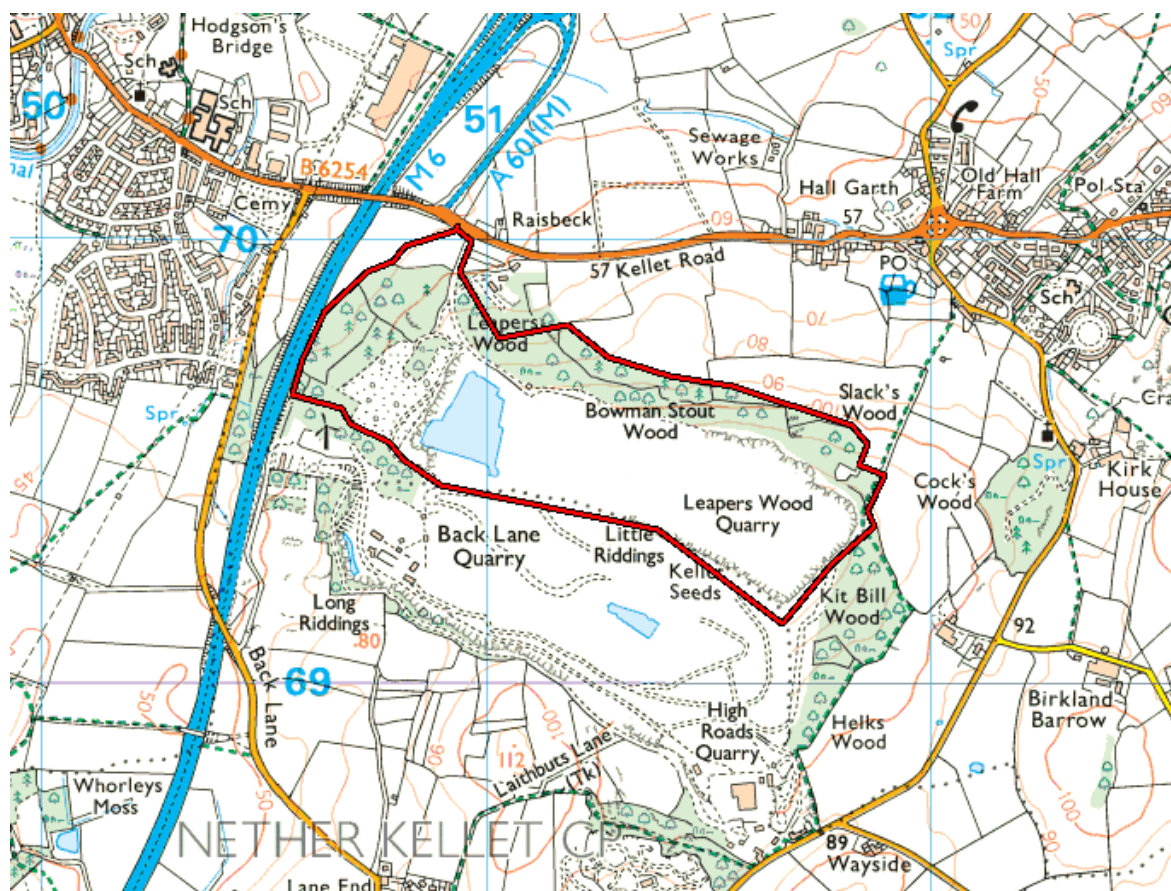
1.2 Proposed works

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) and, where possible, on all adjacent open land and field parcels. 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.

Figure 1: Leapers Wood Quarry boundary



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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 23rd 2021.

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 were applicable. Secondary codes were used with regard to land management, origin and habitat mosaics only. The minimum mappable unit was 25m², 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 23rd April 2021. 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 (sunny, warm with light breeze) was suitable for signs or sightings of most diurnal wildlife, including reptiles. The likely presence of species mentioned above was also inferred from the potential of the habitat to support them.

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 has 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.

Pedestrian access was only permitted outside the main working area of the quarry.

Where habitats could not be directly accessed, or were not easily assessed as plants were not yet in full bloom, other sources of information (previous surveys, reports etc) were used to guide the mapping. It is possible that small areas of habitat (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.

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
Cringlebarrow & Deepdale SSSI	Botanical (woodland) & limestone pavement	5km

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
- 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, hawthorn, oak, birch and hazel in varying proportions. 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 limestone pavement is 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 are few veteran trees, and few 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.

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.

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.

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 species poor limestone grassland. It is dominated by grasses and bramble has established in places. Species include wild strawberry, barren strawberry, ground ivy as well as woodland ground flora species.

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.

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.

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 corvid – with various in 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). There is anecdotal evidence of them breeding in the quarry in recent years.

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
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.

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.

3.3 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 dunnock, 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 have previously used the adjacent Back Lane Quarry to breed – there is a successful breeding record from 1990- and may well use any suitable cliffs in the quarry void as quarrying activity changes.

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 this 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).

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 survey (orange tip butterfly, speckled wood butterfly, small tortoiseshell, admiral 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 CONCLUSIONS

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. 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 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).

- **Habitats**

No notable habitats will be damaged or destroyed as a direct consequence of a deepening of quarrying at Leapers Wood Quarry.

- **Birds**

Nesting birds are present in woodland and scrub around the site. None of these nesting sites should be impacted by the deepening of quarrying activities at Leapers Wood Quarry. The cliffs around the north-east section of the quarry void are suitable for peregrine falcon (which has greater protection than most UK birds) as they are steep, have suitable ledges and are relatively undisturbed by active quarrying.

- **Reptiles & amphibians**

The terrestrial habitat to the west of the quarry is suitable for reptiles, but this habitat is isolated from other areas of good habitat and also there have been no sightings or local records of any reptile species. There is a low chance of reptiles being present on site. This habitat won't be directly impacted by the deepening of extraction, and so there is no requirement for a reptile survey.

The one pond on site is of very low quality for breeding amphibians, and isolated from any other suitable breeding ponds. There are no records of amphibians in or immediately around the quarry. The pond will not be directly impacted by the deepening of the quarry, and as such there is a low risk of the proposals impacting on any amphibians.

- **Terrestrial mammals & bats**

Badger have been recorded in the woodland around the periphery of the quarry, and the adjacent Back Lane Quarry. Setts (including a main sett), paths and digging/snuffle marks have been noted, and they are known to cross the quarry road to move between Long Riddings Wood and the woodland and scrub around Leapers Wood Quarry. They are unlikely to stray into the active area of the quarry as there is no food source for them. The badger setts are mostly over 50m from the active quarry (one is close to the north-east corner of the quarry), and should not be impacted by the deepening of the quarry (though will still be affected by vibrations from blasting as they are at present).

Bats are likely to use the peripheral woodland habitat for roosting and foraging, 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. The deepening of the quarry is unlikely to have any additional impacts.

- **Invertebrates**

Some of the peripheral habitats are likely to support notable invertebrates- especially the open mosaic habitat and limestone grassland. These habitats should not be directly affected by a deepening of quarrying activity, and exist as a direct consequence of occasional disturbance from quarrying activity (such as tipping material), which prevents more permanent habitats establishing.

5. RECOMMENDATIONS

5.1 Recommendations for further survey

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

5.2 Recommended mitigation for ecological impacts not requiring further survey

Bird nesting habitat- cliffs

Adopt and follow a 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 Leapers Wood and Back Lane Quarries) should be identified in spring each season (by a dedicated member of staff, or ecologist). The protocol should describe accepted methods of work include 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.

5.3 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. Buddleia has become quite dominant in the south-west of the quarry. An action plan should be written and adhered to, with the intention to control the further spread of this species into new habitats – especially open mosaic habitat and woodland edge, at the expense of native wildflowers and scrub. The existing large bank of buddleia scrub can be retained as it has some value as a habitat. Control by cutting every 2 years should be sufficient to control the spread in new habitats, without the risk of poisoning pollinators by using herbicide sprays.

In the woodland to the north of the quarry there are few natural crevices in the trees for birds and bats. Installation of 20 bird boxes and 10 bat boxes of varying types will provide additional nesting habitat for woodland birds and roosting sites for bats. The following are recommended:

- One tawny owl box (installed on a tree away from the quarry edge and also away from the other nesting boxes)
- 10 Schwegler 1B nest boxes (or similar) for tits, nuthatches and sparrows (7 with 26mm hole, 3 with 32mm hole)
- 7 open fronted nesting boxes (for robins, wren, wagtails)
- 2 starling nestboxes (such as Schwegler 3S) with 45mm hole
- 2 cavity style bat boxes
- 7 crevice style bat boxes
- 1 colony/ maternity style bat box

Bird boxes should be installed 2-4m up trees, ideally on the north or east side (though this is less critical in the woodland). The boxes should be spread throughout the woodland to maximise their uptake (as most bird species are territorial when nesting).

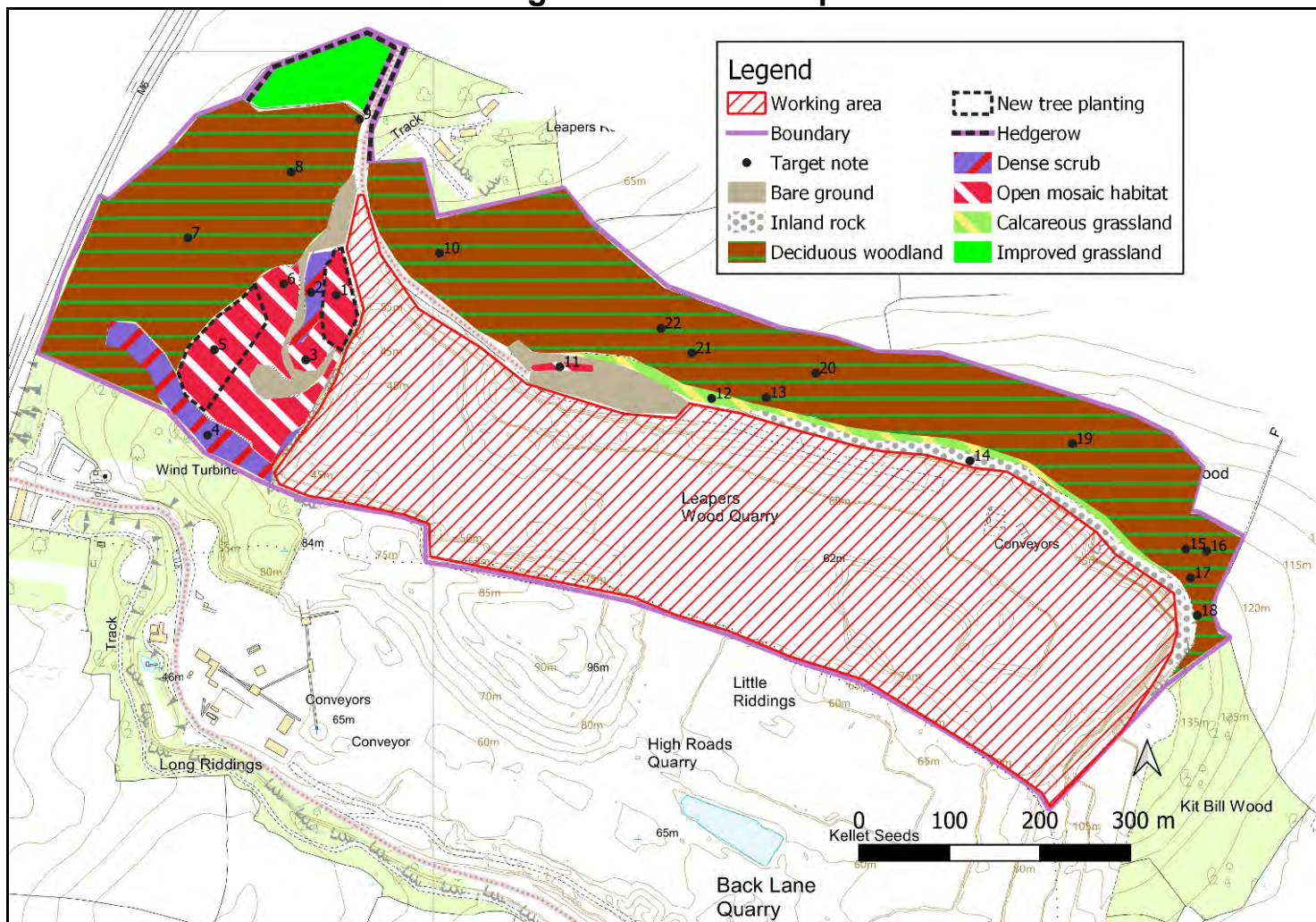
Bat boxes should be installed between 3 and 6m up trees, ideally facing south or west and in a location likely to receive some direct sunlight (if possible).

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APPENDICES

Figure 2: Habitat map



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Survey target notes

Refer to figure 2 for locations of target notes.

No.	Description
1	UKHab: u1a 56 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 10 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: h3 Dense scrub, predominantly buddleia. Some willow and bramble. See image 5.
5	UKHab: u1a 56 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 and 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 33 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	UKHab: u1a Small area of establishing grassland surrounded by bare ground, tracks and tipped material. Species include coltsfoot, mouse ear hawkweed <i>Pilosella officinarum</i> , silverleaf <i>Potentilla anserina</i> , ground ivy, wood sage, strawberry and bryophytes. See image 9.
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 11.
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 10.
15	Single badger hole with paths in several directions. No signs of recent use, but clear entrance.
16	UKHab: w1f 36 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 12.

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



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.
Ephemeral vegetation and woodland edge- northern edge of the quarry.

See note 11.



Photo 10.
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 11.
Dead and dying trees along the south facing edge of the woodland by the steep cliffs.

See note 13.



Photo 12.
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 <0.5 = poor; HSI 0.5-0.59 = below average; HSI 0.6-0.69 = average; HSI 0.7-0.79 = good; HSI >0.8 = excellent.</p>					