



Horn Cragg Quarry, Silsder



Ecological Impact Assessment

28/02/2023

Report Ref. ER-5064-13B

Report reference	ER-5064-13B
Author	Sam Kitching BSc (Hons) MCIEEM Principal Ecologist
Technical Review	Christopher Shaw BSc (Hons) MCIEEM Principal Ecologist
QA	Peter Brooks BSc (Hons), MA CIEEM, CEnv Managing Director
Authorised	Peter Brooks BSc (Hons), MA CIEEM, CEnv Managing Director
Date	28/02/2023
Report duration	In accordance with CIEEM (2019), unless otherwise stated the findings of this report remain valid for a period of 18 months. After this period advice should be sought on the scope of any updating work required.



Contents

Introduction	5
Method	6
Scope of Assessment	6
Desk Study	6
Field Survey	6
Ecology Baseline	7
Designated Sites and Conservation Areas	8
Habitats	8
Species and Species Groups	11
Description of the Proposed Development	12
Impacts and Effects of Development	13
Mitigation & Residual Effects	18
Biodiversity Net Gain	22
Timing Issues	24
Cumulative Effects	24
Offsite Measures or Compensation	24
Enhancement	24
Monitoring	24
Policy and Legislation	24
Conclusion	24

Summary

The Site is occupied by a range of upland habitats. Upland heath, is assessed as a habitat of high distinctiveness in the context of the DEFRA BG Metric.

The site has been found to support significant levels of badger activity, though this is largely constrained to the western portion of the site, away from proposed quarrying activities.

Detailed bird survey has demonstrated that the site is not valued by species associated with the nearby SPA, but that it does support a very small number of territories of BoCC Red and Ambler list species.

Using the Defra Metric 3.1 Calculator tool, by its completion, the scheme is expected to result in a net gain in Habitat Units.

The following mitigation is recommended to deal with residual significant effects; these documents could be secured via standard conditions provided in the British Standard BS:42020.

- A BS:42020 Biodiversity Management Plan (BMP).
- A BS:42020 Construction Environmental Management Plan (CEMP: Biodiversity)

A Natural England Badger Licence will be sought once planning permission has been secured, and any pre-commencement planning conditions relating to ecology have been discharged. This will be in place prior to works commencing on site.

Introduction

1. Brooks Ecological Ltd was commissioned by A. D. Calvert Architectural Stone Supplies Ltd to carry out an Ecological Impact Assessment (EclIA) for their proposed recommissioning of quarrying activities at Horn Cragg Quarry, Silsden.
2. The British Standard BS:42020 recommends that a proportional assessment of ecological impacts should be made - such that decision making relating to the NPPF ‘mitigation hierarchy’, the planning balance’, and the use of conditions is suitably informed.
3. The purpose of the EclIA report is to use the information gathered, alongside the proposals for the Site, to:
 - identify any significant effects associated with the proposed development,
 - set out any mitigation (including monitoring) required to address these effects, and to ensure compliance with legislation and policy,
 - identify suitable enhancement,
 - identify measures required to secure mitigation and enhancement,
 - identify and assess any residual effects and their legal, policy and development management consequences.
4. This report adapts the format set out in the Chartered Institute for Ecology and Environmental Management (CIEEM) guidelines for Ecological Report Writing (December 2017).



Ecological Impact Assessment (EclIA) Checklist



EclIA Criteria (to ensure decisions are based on adequate information in accordance with Clauses 6.2 and 8.1 of BS42020:2013)		Yes No n/a	Paragraph reference number(s)
Pre-app/ scope	1. Where pre-application advice has been received from the Local Planning Authority and/or an NGO and/or statutory body (e.g. NE DAS, NRW DAS), it has been fully accounted for in the EclIA		
	2. The scope, structure and content of the EclIA is in accordance with published good practice ⁱⁱ , ⁱⁱⁱ and ^{iv}		
Surveys, Sites, Species and Habitats	3. Adequate ^v and up-to-date ^{vi} : a. Desk study has been undertaken ^{vii} b. Phase 1 habitat survey (or equivalent) has been undertaken ^{viii} c. Phase 2 ecology surveys have been undertaken (where necessary) ^{ix}		
	4. All statutory and non-statutory sites likely to be significantly affected are clearly and correctly identified		
	5. All protected or priority species and priority habitats ^x likely to be significantly affected are clearly and correctly identified, and adequate surveys have been undertaken to inform the baseline		
	6. Any invasive non-native plant species present are clearly and correctly identified		
Impacts and Effects	7. Where a separate PEA Report states that Phase 2 ecology surveys are required, these have been undertaken in full and results submitted with the application (or lack of such surveys is justified)		
	8. The assessment is based on clearly defined development proposals along with relevant drawings/plans (and any plans used are the same version number as those submitted with the application) or		
	9. The residual ecological effects are considered to be not significant at any geographical scale irrespective of the detailed development proposals, and the assessment is based on a worst-case-scenario		
Mitigation, Compensation and Enhancement	10. The report describes and assesses all likely significant ecological effects (including cumulative effects) clearly stating the geographical scale of significance (where relevant)		
	11. The mitigation hierarchy has been clearly followed ^{xi}		
	12. The report: a. Clearly identifies the proposed mitigation and compensation measures, and explains how these will adequately address all likely significant adverse effects b. Includes, where necessary, proposals for post-construction monitoring c. Recommends how proposed measures may be secured through planning conditions/obligations and/or necessary licences		
	13. A summary table of proposed mitigation and compensation measures has been provided		
	14. The need for any mitigation licences required in relation to protected species is clearly identified		
	15. Proposals to deliver ecological enhancement/Biodiversity Net Gain have been provided		
Competence/Good Practice	16. Limitations ^{xii} of the ecological work have been correctly identified and the implications explained		
	17. All relevant key timing issues (e.g. site vegetation clearance or roof removal) that may constrain or adversely affect the proposed timing of development have been identified		
	18. All ecological work and surveys accord with published good practice methods and guidelines OR deviation from such guidelines is made clear and fully justified, and the implications for subsequent conclusions and recommendations made explicit in the report ^{xiii}		
Conclusions	19. All ecologists and surveyors hold appropriate species licences (where relevant) and/or have all necessary competencies to carry out the work undertaken		
	20. The report clearly identifies where the proposed development complies with relevant legislation and policy, highlighting any possible non-compliance issues, and highlighting circumstances where a conclusion cannot be drawn as it requires an assessment of non-ecological issues (such as socio-economic ones)		
	21. The report provides a clear summary of losses and gains for biodiversity, and a justified conclusion of an overall net gain for biodiversity		
	22. Justifiable conclusions ^{xiv} based on sound professional judgement ^{xv} have been drawn as to the significance of effects on any designated site, protected or priority habitat/species or other ecological feature, and a justified scale of significance has been stated		

Method

Scope of Assessment

5. The application site 'the Site' comprises a former quarry and surrounding land, last worked in the 1980's, allowing heathland and associated mature secondary habitats to develop. The extent of this assessment is the development area within the red line boundary defined in Figure 2.1, opposite.
6. The assessment uses a 2 km area of search around the Site for records of protected and notable species and locally or nationally designated wildlife sites.
7. Ecological surveys and reports informing this assessment comprise of the following:

Preliminary Ecological Appraisal, Brooks Ecological. Report Reference ER-5064-01. April 2021.

SPA Bird Foraging Survey, Brooks Ecological. ER-5064-02, July 2021.

Breeding Bird Survey, Brooks Ecological. ER-5064-03, July 2021

Badger Survey, Brooks Ecological. ER-5064-04, October 2021

Bat Activity Survey, Brooks Ecological. ER-5064-05, October 2021

Bat Emergence Survey, Brooks Ecological, ER-5064-06, October 2021

Reptile Survey, Brooks Ecological. ER-5064-07, October 2021

Biodiversity Gain Calculations Report, Brooks Ecological. ER-5064-08E, November 2021.

Detailed Vegetation Survey, Brooks Ecological. ER-5064-09, August 2022.

Breeding Bird – Late Season Survey, Brooks Ecological. ER-5064-10, Sept 2022.

Bat Hibernation Survey, Brooks Ecological. ER-5064-11, February 2023

Updating Badger Assessment, Brooks Ecological. ER-5064-12, February 2023.

Field Survey

8. Full details of the methodologies used and the results obtained are contained in the relevant documents referenced opposite. Unless stated otherwise these followed the relevant survey guidelines referenced in reports.

Desk Study

9. A full desk study including consideration of local biological records, aerial photographs, local designations, and planning guidance has been carried out.

Figure 1 Site area under assessment (red line)



Assessment Method

10. In assessing the significance of effects, we refer to Section 5 of CIEEM (2018) - that a 'significant effect' is an effect that either supports or undermines biodiversity conservation objectives for 'important ecological features' or for biodiversity in general. In relation to ecological features, we consider the following factors in combination, including;
 - the feature's value on an ascending scale, from Site to international value,
 - the site's position in the local landscape,
 - its current management, and
 - its size, rarity, or threats to its integrity
11. There are several tools available to aid this consideration, including established frameworks such as Ratcliffe Criteria or concepts such as Favourable Conservation Status. Also of help is reference to Biodiversity Action Plans in the form of the Local BAP and Section 41 of the NERC Act (2006) to determine if the Site supports any Priority Habitats or Habitats of Principal Importance, or presents any opportunities in this respect.
12. The assessment considers the development proposals set out below, from which the potential impacts can be summarised as:
 - Vegetation and habitat removal
 - Disturbance, pollution, or interference arising from the Site's construction
 - Disturbance, pollution, or interference arising from the Site's operation
13. This report deals with any significant effects potentially arising from these impacts. It looks at how the mitigation hierarchy can be applied to any effects and the implications of any residual significant effects.

Ecology Baseline

14. A *summary* of the points salient to this assessment are set out below:

Designated Sites and Conservation Areas

15. Impacts on both Statutory (International and National) and Non-Statutory designations or their interests have been ruled out at PEA Stage.

Habitats

16. The Site comprises habitats mapped opposite and described in the table overleaf.

17. For the purposes of this assessment and to conform with the requirements of the DEFRA Metric, habitats have been mapped in accordance with the UK Habitat Classification system.

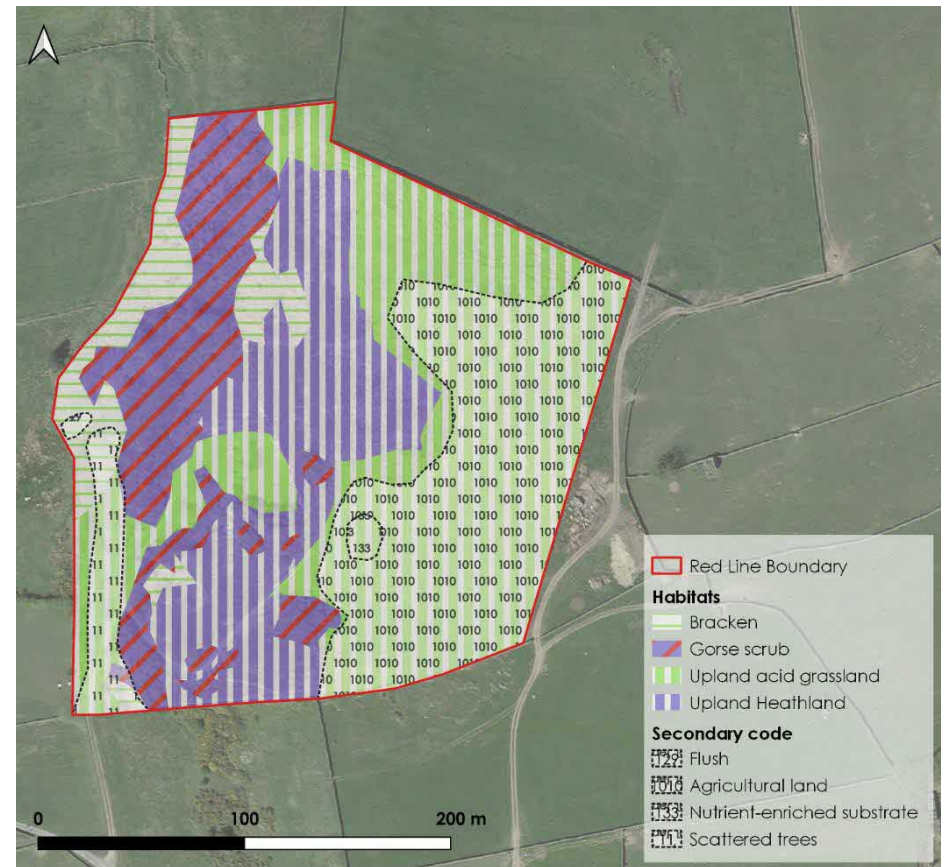
18. Additionally, a detailed vegetation survey was undertaken specifically to address concerns with seasonality of survey and to allow assessment against the West Yorkshire Ecology's Local Wildlife Site Selection Criteria. To this end, National Vegetation Classification codes were also used, as detailed in the related report (ER-5064-09).

Potential future changes to the baseline

19. The Site's use and ecological baseline will likely be unchanged until the time of the proposed development.

20. In the absence of management, development or new quarry works the more competitive habitats / species around the site would spread, largely at the expense of the acid grassland found on site. "Improvement" of the agricultural grassland would be lost overtime with this area of the site reverting to more acidic habitats.

Figure 2a The Site's habitat baseline



21. The table below sets out the habitats at this Site and their relevance in this assessment.

Table 1 Site Habitats Summary

Habitat Feature	Notes	Valued at what scale
g1b - Upland Acid Grassland supporting: Flush Nutrient enriched substrate Agricultural land	<p>This habitat type occupies the eastern half of the site. For the purposes of the PEA and in accordance with the UK Habs, two thirds of this area is overlain with the secondary code “Agricultural Land” reflecting its management which has seen the application of fertilisers, lime and consistent grazing by livestock, thus reducing its value significantly.</p> <p>The detailed vegetation survey broke this area down into two distinct types –U4b-MG6b transitional grassland and U4 with pockets of U5 broadly reflecting the areas mapped with the secondary code (as above) agricultural land and not, respectively.</p> <p>The detailed vegetation survey noted that the U4b-MG6b grassland on site does not conform closely with either classification and that this habitat type is ubiquitous locally. The area mapped as U4 again, does not closely conform to its habitat classification, largely a reflection of management and grazing pressure, pockets of U5 were also noted.</p> <p><u>The areas mapped as acid grassland are species poor and do not contain locally scarce or otherwise important species. The grassland does not meet the threshold value of the WYE Local Wildlife Site Selection Criteria.</u></p> <p>Loss will be mitigated / compensated through the Biodiversity Net Gain process, which will target the provision of similar grassland or habitats of a higher distinctiveness.</p>	Site Level Reflecting the failure to qualify under Local Wildlife Site Selection Criteria
g1c - Bracken	<p>A ubiquitous, species poor habitat of little value.</p> <p>Loss will be mitigated / compensated through the Biodiversity Net Gain process, which will target the provision of similar grassland or habitats of a higher distinctiveness.</p>	Negligible
h3e –Gorse Scrub	<p>A species poor habitat supporting no locally scarce or otherwise important species. Beyond its contribution to the Biodiversity Gain Calculation it is of little value.</p> <p>Loss will be mitigated / compensated through the Biodiversity Net Gain process, which will target the provision of scrub habitat or habitats of a higher distinctiveness.</p>	Site level
h1b –Upland heath	<p>Typical of dry heaths in the local area, dominated by <i>Calluna vulgaris</i> in varying states of maturity with a subordinate but constant cover of <i>Vaccinium myrtillus</i> and <i>Dechampsia flexuosa</i>. It supports high cover values of calcifuge mosses like <i>Hypnum</i>, <i>Pleurozium</i> and <i>Dicranum</i>. Associated calcifuge grasses are <i>Nardus stricta</i>, <i>Festuca ovina</i> and <i>Molinia caerulea</i>, responding according to level of soil moisture. The heath vegetation is under threat from invading bracken which is present in high cover around the gorse dominated vegetation.</p> <p>This habitat on site fails to meet the Local Wildlife Site Selection Criteria based on its elevation and location within the Southern Pennine Character Area.</p> <p>Despite not meeting LWS selection criteria, this habitat type is assigned “high” distinctiveness in the DEFRA Metric, this is reflected in its value level in this report.</p>	<u>Local level</u>

22. The table below shows the site’s habitats in terms of their measured Extent (ha or km) and Biodiversity Value (Habitat Units)- this is an excerpt from the DEFRA Biodiversity Metric 3.1 Spreadsheet Calculator.

Figure 3 Site Habitats as defined in Biodiversity Net Gain calculations –Site Baseline¹.

A-1 Site Habitat Baseline								
Condense / Show Columns			Condense / Show Rows					
Main Menu			Instructions					
Habitats and areas				Distinctiveness	Condition	Strategic significance	Suggested action to address habitat losses	Ecological baseline
Ref	Broad Habitat	Habitat Type	Area (hectares)	Distinctiveness	Condition	Strategic significance		Total habitat units
1	Grassland	Bracken	0.5045	Low	Condition Assessment N/A	Formally identified in local strategy	Same distinctiveness or better habitat required ≥	1.16
2	Grassland	Upland acid grassland	3.018	Medium	Poor	Formally identified in local strategy	Same broad habitat or a higher distinctiveness habitat required	13.88
3	Heathland and shrub	Gorse scrub	1.0968	Medium	Poor	Formally identified in local strategy	Same broad habitat or a higher distinctiveness habitat required	5.05
4	Heathland and shrub	Upland Heathland	1.3675	High	Moderate	Formally identified in local strategy	Same habitat required =	18.87
5								
			Total habitat area	5.99				38.96

¹ Our report provides an estimate of the sites value in Biodiversity Units. This is based on thorough assessment at the time of survey and using the information available at this time. In this assessment we have used the latest version of DEFRA’s Biodiversity Metric Tool, the UK Habitats Classification and relevant guidance. This assessment requires subjective judgments to be made in terms of habitat type and condition and could be open to other interpretations. Reliance on the Unit Score, or conversion of this into a monetary value, would be at the developer’s own risk. Where conversion to monetary value is required, it is always advisable to get calculations checked independently.

Species and Species Groups

23. Potential constraints relating to relevant groups were investigated through the surveys listed above. Those highlighted are of relevance to the Site and are referenced later in the assessment.

Table 2 Summary of relevant faunal issues

Species/ Group (Feature)	Notes	Valued at what scale
Bats	<p>Detailed Bat Survey has demonstrated a likely absence of roosts, during both the summer active season and across hibernation period.</p> <p>Seasonal Activity Surveys have demonstrated that the Site is used by up to six species of bat, although this is heavily dominated by common and soprano pipistrelle, and noctule. Activity was moderate during the spring period, with marked decreases seen in summer and again in autumn. Patterns of activity suggest that proposals to re-open the quarry face will have minimal impact on local bat populations, provided the habitats across the Site's western sector are largely avoided, as is proposed.</p>	Site Level
Birds	<p>Extensive survey of the site has been undertaken at appropriate times of year. This has revealed nesting by a single species on the BoCC Red List (Song thrush) and three on the Amber List (willow warbler, bullfinch and dunnoek), seven common, green list species were also recorded displaying breeding behaviour on site, while an additional seven species noted (two of which are on the Red List) did not display any breeding behaviour. Late season surveys revealed no additional breeding by Red or Amber listed species.</p> <p>SPA foraging surveys returned no presence of target species foraging within the site. As such, and in combination with the absence of breeding, it was concluded that recommencement of quarrying activity would not lead to noticeable impacts on SPA qualifying species.</p> <p>Development would result in the loss of breeding and foraging habitat for red and amber listed bird species of conservation concern, though the site is limited in scale by comparison to the abundance of habitat in the wider area. Despite the retention of much of this habitat, species nesting in scrub and heathland habitats will be displaced into similar habitats in the surrounding area, though it is also possible that some species will tolerate the increased disturbance of the development and continue to make use of the Site post-development</p>	<u>Local Level</u>
Reptiles	A full suite of reptile surveys was undertaken at appropriate times of year returning no evidence of any reptile population on site.	N/A

Description of the Proposed Development

24. Proposals are for the restarting of quarrying activity at the site. This will be undertaken in phases as shown in the figure adjacent.
25. With the exception of Phase 1, at the time of a new phase coming online, the infilling of the previous phase will commence allowing restoration to follow after. The first phase of restoration will commence following completion of Phase 4 extraction.
26. The proposed quarry area excludes the western bank of the site, thus avoiding many of the potential impacts (bats and badgers). Proposals have had the opportunity to respond to the findings of the PEA and have built in all potential avoidance - in terms of phased delivery and restoration of habitats. The following sections examine impacts resulting from the proposals which could not be avoided.
27. Impacts are assessed on the basis of the effects impacting the valued habitats, species, or sites which have been identified above.
28. The following plans have been provided by the client to inform this assessment:

Site Layout Plan. Dwg. No. 232/5 - 3
(04.05.2021, The Mineral planning Group).

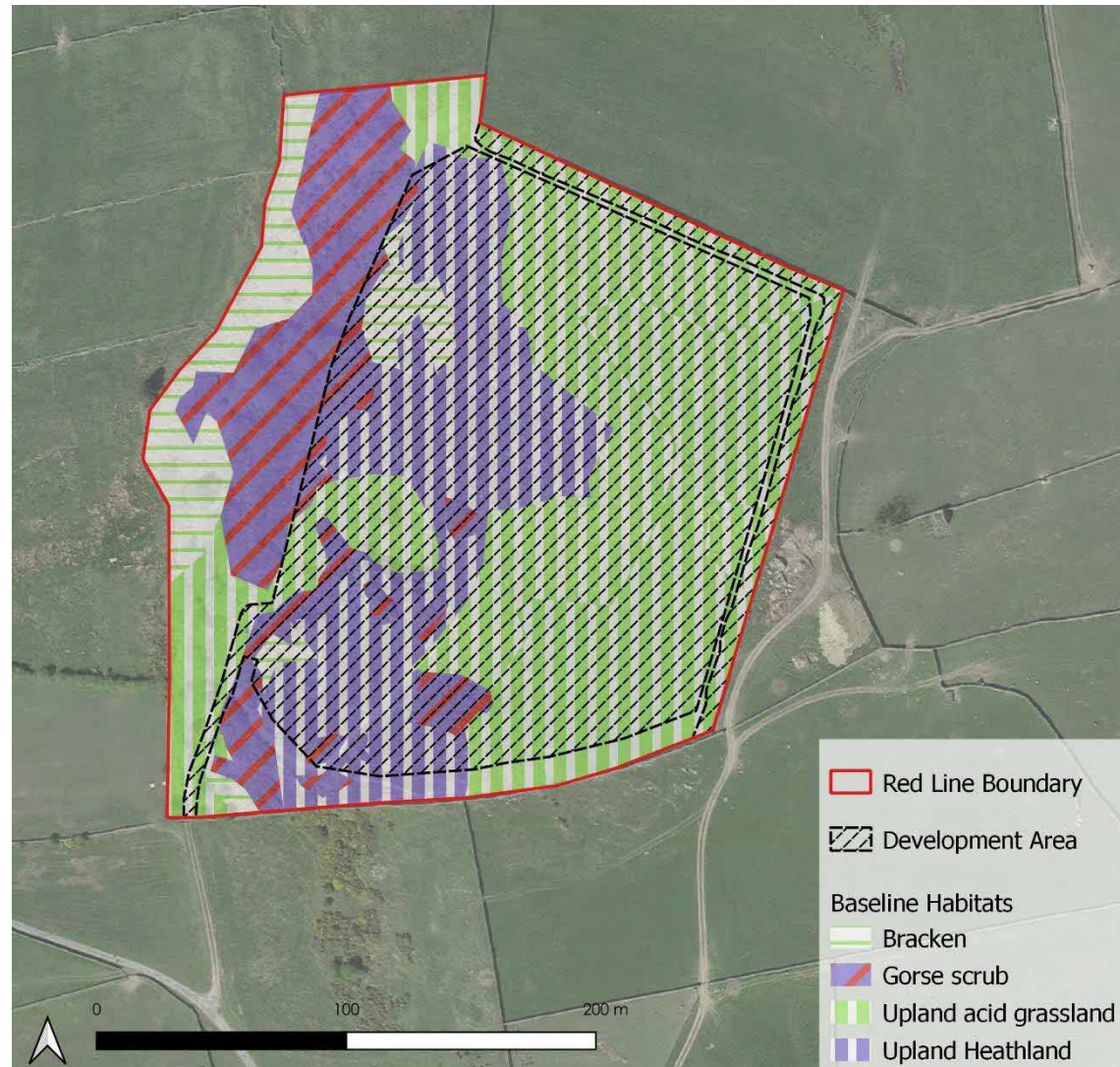
Figure 4 Site Layout



Impacts and Effects of Development

29. Figure 5 shows the development footprint (black hatch) in relation to the mapped habitats.
30. The development footprint shows the sum extent of the area which will be impacted by quarrying and the required infrastructure. The phased nature of quarrying activities means that this total extent impact plan will not be realised, with areas of habitat retained for long periods before the corresponding phases come on line, and likewise restoration commencing on earlier phases while later phases are worked.
31. The western portion of the site will remain unaffected by these direct impacts. The developed area will be quarried and restored in phases allowing for habitat creation in advanced years (prior to completion).

Figure 5 Development footprint in relation to existing on-Site habitats



- 32. Figures 6 shows a snapshot of quarrying activity at year 20 when the final extraction phase will be completed. This demonstrates that restoration of extraction phases 2,3 and 4 will already have been completed and will have been under “post development” management for some time; some parts for 10 and 15 years.
- 33. At year 22, restoration will be complete, and the entire site will be subject to the “post development” management scheme.

Figure 6 Summary of impacts on existing habitats



Table 3 lists the anticipated Impacts and Effects associated with the proposals.

Impacts during Site Clearance		Stage
1	Habitat will be removed from the Site by clearance and soil stripping using heavy machinery. After the initial site set up and vegetation clearance of the first phase, clearance will be undertaken in blocks as the quarry expands into new phases	<i>Clearance</i>

	Significant Effects - in the absence of mitigation	Acting on	Acting at scale (Maximum)
1a	Direct habitat loss. There will be a loss of habitat generally which will be managed through the Biodiversity Net Gain process. Significant effort has been put into the restoration plan to ensure habitats created provide greater value than that of the baseline, and that habitats of higher distinctiveness are re-created.	Upland Heath Upland Acid Grassland Gorse Scrub Birds Badgers	Local
1b	Damage to retained habitat such as by storage of clearance machinery or materials in these areas. Habitat to the west of the site will be retained through the duration of quarrying activity. Habitat present over later phases of the quarry will be retained until each phase comes online.	Upland Heath Upland Acid Grassland Gorse Scrub	Local
1c	Disturbance. The noise and activity associated with the initial clearance will be of a short duration and h. limited impact.	Badger Birds	Local
1d	Pollution. Risk of pollution incidents during initial vegetation clearance are limited, restricted largely to fuel spills.	Upland Heath Upland Acid Grassland Gorse Scrub	Local
1e	Potential effects on Protected Species . Precautions will be required to minimise the impacts on badgers and nesting birds in habitat retained to the west and retained in later phases of the quarry. Disturbance to badger will be covered under Natural England licence.	Badger Nesting birds	Criminal Offence

	Impacts during Operation / Quarrying	Stage
2	Quarrying activities Quarrying will take place in 6 phases over approximately 20 years.	<i>Construction</i>

	Significant Effects - in the absence of mitigation	Acting on	Acting at scale (Maximum)
2a	Damage to retained habitat such as by storage of machinery or materials in these areas, or further earthworks/quarrying activities beyond the bounds of the current or new phase.	Upland Heath Upland Acid Grassland Gorse Scrub	Local
2b	Disturbance. Noise and vibration associated with quarrying is likely to be significant displacing much of t wildlife that currently uses the site. However, the proposed program of quarrying works is limited to 22 year after which all disturbance will cease.	Badger Birds	Local
2c	Pollution. Quarrying activities are likely to periodically produce large amounts of dust, as will use of the haul road in hot, dry weather. There is potential for fuel or chemical spills during operations.	Upland Heath Upland Acid Grassland Gorse Scrub	Local

	Impacts during Quarrying (Restoration phases)	Stage
3	Landscaping activities will be undertaken following the completion of each phase. .	<i>Construction</i>

	Significant Effects - in the absence of mitigation	Acting on	Acting at scale (Maximum)
3a	Damage to retained and newly created habitat Issues such as storage of machinery or materials in these areas would have a significant impact on the final BNG position. Access will be required to retained areas to commence management and in itself could result in damage.	All habitats and species	Local

	Significant Effects - in the absence of mitigation	Acting on	Acting at scale (Maximum)
3b	Pollution. There is the potential for hazardous chemicals (i.e. herbicides, insecticides, fertilisers) to be used on retained or newly created habitats by landscape contractors. This could lead to increased mortality of vegetation or make it harder for habitats to be created or enhanced in line with the Defra Metric.	All habitats and species	Local
3c	Inappropriate habitat creation or management techniques could mean that the proposals fail to deliver the necessary biodiversity units committed to through the BNG process.	All habitats and species	Local

Mitigation & Residual Effects

34. Where feasible, the **avoidance** of unnecessary impacts has been considered at the design stage and worked into the Site Layout plan. The proposals will incorporate the following **mitigation** in relation to the identified **effects** above, as set out in the table below.
35. Habitat creation and management will need to be applied to the proposals to achieve the calculated BG position as set out (and committed to) in the plan below. These themes would need to be the subject of a suitable Biodiversity Management which would provide a means of achieving the required habitats and condition.
36. Achieving the required Biodiversity Gain position will ensure that effects relating to habitat loss are addressed - both in respect of the habitats identified as valued features, and also the lower value habitats which would previously have been scoped out of Impact Assessments. Our impact assessment therefore only highlights where habitats present place a particular constraint on the protection of, or delivery of habitats on Site; or on off-set agreements.
37. Planning permission for the Site would be anticipated to be subject to standard conditions requiring the production of the following documents:
 - A BS:42020 Biodiversity Management Plan (BMP) –setting out establishment and management of habitats as proposed to achieve the BG position.
 - A BS:42020 Construction Environmental Management Plan (CEMP: Biodiversity) –this will set out measures such as protection of retained vegetation, management of potential pollutants and disturbance, and any additional protected species checks.
38. It will also be a legal requirement that a Mitigation Licence for badgers be secured prior to any work commencing on site. This provision would not be appropriate for planning condition, but could be added as an Advisory.

Table 4 lists the mitigation put in place to address the effects identified in table 5.1

	Mitigation during Site Clearance	Stage
1	Habitat will be removed from the Site by clearance and soil stripping using heavy machinery.	Clearance

	Significant Effects - in the absence of mitigation	Mitigation / Compensation	Residual Magnitude
1a	Direct habitat loss.	<p>By complying with Biodiversity Net Gain policy , the scheme will ensure that overall, the impacts of habitat loss will be fully addressed. The plan has been designed to deliver this gain in its entirety on site, and to conform with trading rules.</p> <p>The BMP will detail the creation and management of new habitats, ensuring on-site habitats meet their target habitat types and condition scores, as shown in the Defra Metric.</p> <p>The BMP will also detail the provision of faunal features, such as bird nesting and bat roosting boxes .</p>	Positive

	Significant Effects - in the absence of mitigation	Mitigation / Compensation	Residual Magnitude
1b	Damage to retained habitat such as by storage of clearance machinery or materials in these areas.	The CEMP will detail the installation of barrier fencing around the retained habitats and around newly created habitats at appropriate times.	Neutral
1c	Disturbance. The noise and activity associated with the initial clearance will be of a short duration and have limited impact.	The operator's CEMP will detail time limits to work on Site and the installation of screened fencing to limit visual disturbance of sensitive habitat. However, some level of disturbance is unavoidable.	Minor Negative
1d	Pollution. Risk of pollution incidents during initial vegetation clearance are limited, restricted largely to fuel spills.	The CEMP will detail the installation of barrier fencing around the retained and newly created habitat during later phases. Machinery and materials will only be stored in designated areas in Phase 1.	Neutral
1e	Potential effects on Protected Species . Precautions will be required to ensure impacts on badgers and nesting birds in habitat retained to the west and retained in later phases of the quarry can be avoided. Disturbance to badger will be covered under Natural England licence.	A Mitigation Licence for badger will be secured with Natural England. All works on site will follow the method set out in the licence application Method Statement. The CEMP will detail necessary pre-work checks for nesting birds.	Avoided entirely.

	Mitigation during Operation / Quarrying	Stage
2	Quarrying activities Quarrying will take place in 6 phases over approximately 20 years.	<i>Construction</i>

	Significant Effects - in the absence of mitigation	Mitigation / Compensation	Residual Magnitude
2a	Damage to retained habitat such as by storage of machinery or materials in these areas, or further earthworks/quarrying activities beyond the bounds of the current or new phase.	The scheme has been designed to ensure materials or equipment will not need to be stored, or access otherwise required to each phase until it is to be worked. The CEMP will detail the installation of barrier fencing around the retained habitats and around newly created habitats at appropriate times.	Neutral
2b	Disturbance. Noise and vibration associated with quarrying is likely to be significant displacing much of the wildlife that currently uses	The nature of dimension stone extraction is periodic and the site would be worked on a campaign basis. As such, quarrying will not be taking place all day, everyday. When campaigns are live, quarry management plan will detail times of the day over which	Minor Negative

	Significant Effects - in the absence of mitigation	Mitigation / Compensation	Residual Magnitude
	site. However, the proposed program of quarrying works is limited 22 years, after which all disturbance will cease.	certain activities will be undertaken. There will be no blasting at the site.	
2c	Pollution. Quarrying activities are likely to periodically produce large amounts of dust, as will use of the haul road in hot, dry weather. There is potential for fuel or chemical spills during operations.	A Dust Assessment and Management Plan has been produced. The nature of dimension stone extraction means the process produces far less dust than standard quarrying activities. The Dust Assessment and Management Plan concluded there would be “negligible magnitude of dust effects as a result of the proposed development at all nearby receptors” The Dust Management Plan details necessary measures to minimise any effect from dust. The CEMP will detail the installation of barrier fencing around the retained and newly created habitat during later phases. Bunded compounds will be used for storage of machinery and materials.	Neutral

	Mitigation during Quarrying (Restoration)	Stage
3	Landscaping activities will take place following the completion of each phase.	<i>Construction</i>

	Significant Effects - in the absence of mitigation	Mitigation / Compensation	Residual Magnitude
3a	Damage to retained and newly created habitat Issues such as storage of machinery or materials in these areas would have a significant impact on the final BNG position. Access will be required to retained areas to commence management and in itself could result in damage.	The scheme has been designed to ensure materials or equipment will not need to be stored, or access otherwise required to each phase until it is to be worked. The CEMP will detail the installation of barrier fencing around the ‘newly created habitat’. The BMP will detail a program of monitoring surveys which will assess the trajectory of newly created habitat and highlight issues associated with damage.	Neutral
3b	Pollution. There is the potential for hazardous chemicals (i.e. herbicides, insecticides, fertilisers) to be used on retained or newly created habitats by landscape contractors. This could lead to increased mortality of vegetation or make it harder for habitats to be created or enhanced in line with the Defra Metric.	The BMP will specify preparation and establish work’s for all new and retained habitats covered by the Defra Metric. This will detail where hazardous chemicals can and cannot be used.	Neutral

3c	Inappropriate habitat creation or management techniques could mean that the proposals fail to deliver the necessary biodiversity unit: committed to through the BNG process.	The BMP will specify preparation and establish work's for all new and retained habitats covered by the Defra Metric. This will detail where hazardous chemicals can and cannot be used.	Neutral
----	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------

Biodiversity Net Gain

39. There will be a requirement for the proposals to secure a **Biodiversity Net Gain (BNG)** (in accordance with BS:8683) at a level determined by the Local Planning Authority (LPA in line with their own policies and guidance in the NPPF).
40. In cases where development results in a shortfall, this requirement would need to be off-set through the creation of Units off-Site by direct works, or through contribution to a strategic fund operated by the LPA or a third party. An agreement detailing any off-setting required would be the subject of a condition of planning.
41. Calculations setting out the position of the proposals in relation to BNG are set out below and covered in greater detail in the BNG Calculations Report (ER-5064-08E, Nov 2022).
42. These calculations are based on the plans available at this time and fundamentally hinge on the principal of new habitat creation works being undertaken at the completion of each phase, this allows habitat to be created in advanced years (in relation to completion of quarrying works). Habitat types which will need to be applied to the proposals to achieve the calculated BNG position are set out (and committed to) in the plan opposite. These are considered realistic and achievable. Measures to ensure habitats attain the habitat types and condition scores outlined in the plan opposite and the Defra Metric would be covered by the Biodiversity Management Plan and would need to dovetail with any Landscape Masterplans.
43. Achieving the required Biodiversity Net Gain position will ensure that effects relating to habitat loss are addressed - both in respect of the habitats identified as valued features, and also the lower value habitats which would historically have been scoped out of Impact Assessments.

Net Gain Calculations

44. The proposals will lead to an overall gain in habitat units, providing an additional 8.34 Habitat Units (21.42%) predicted.
45. The proposals also meet the DEFRA Metric trading rules, which specify like-for-like or like-for-better compensation of lost habitats.
46. The client has been provided with a full copy of the Biodiversity Metric 3.1 Calculation Tool.

Figure 7 Post development habitat types

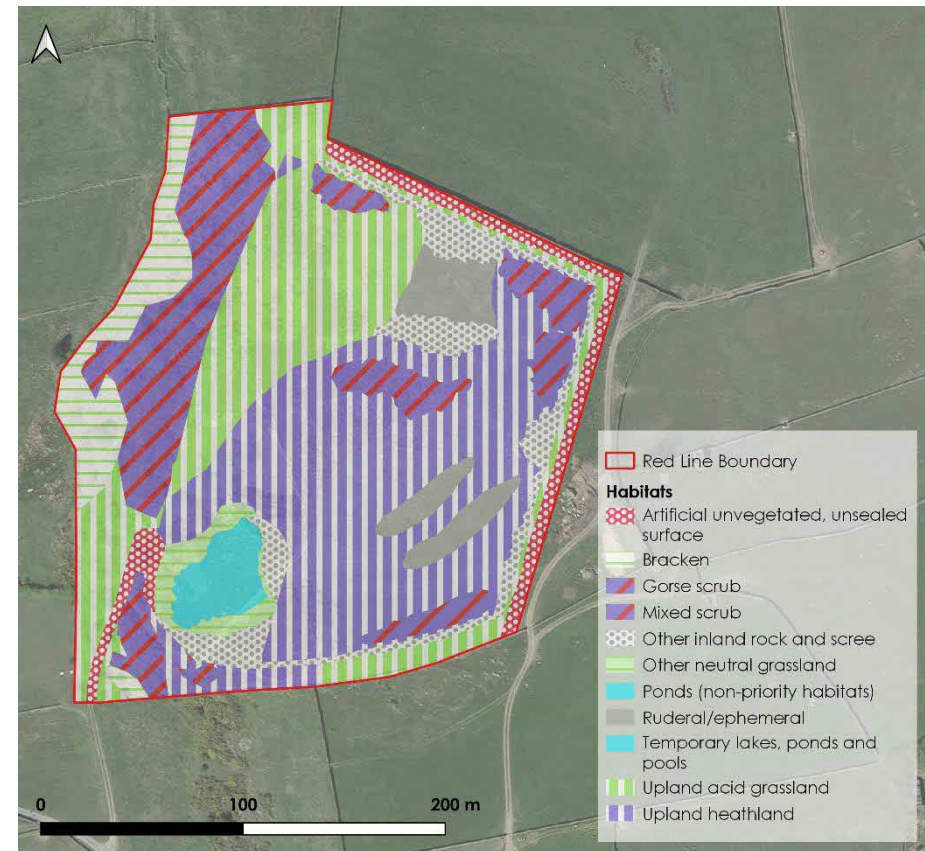


Figure 8 Headline Summary extracted from Biodiversity Metric 3.1 Calculator tool

5064 - Horn Crag Quarry - Year 42		Return to results menu	
Headline Results			
On-site baseline	<i>Habitat units</i>	38.96	
	<i>Hedgerow units</i>	0.00	
	<i>River units</i>	0.00	
On-site post-intervention <small>(Including habitat retention, creation & enhancement)</small>	<i>Habitat units</i>	47.30	
	<i>Hedgerow units</i>	0.00	
	<i>River units</i>	0.00	
On-site net % change <small>(Including habitat retention, creation & enhancement)</small>	<i>Habitat units</i>	21.42%	
	<i>Hedgerow units</i>	0.00%	
	<i>River units</i>	0.00%	
Off-site baseline	<i>Habitat units</i>	0.00	
	<i>Hedgerow units</i>	0.00	
	<i>River units</i>	0.00	
Off-site post-intervention <small>(Including habitat retention, creation & enhancement)</small>	<i>Habitat units</i>	0.00	
	<i>Hedgerow units</i>	0.00	
	<i>River units</i>	0.00	
Total net unit change <small>(including all on-site & off-site habitat retention, creation & enhancement)</small>	<i>Habitat units</i>	8.34	
	<i>Hedgerow units</i>	0.00	
	<i>River units</i>	0.00	
Total on-site net % change plus off-site surplus <small>(including all on-site & off-site habitat retention, creation & enhancement)</small>	<i>Habitat units</i>	21.42%	
	<i>Hedgerow units</i>	0.00%	
	<i>River units</i>	0.00%	

Timing Issues

- 47. Standard constraints will apply to nesting birds and vegetation clearance.
- 48. Securing a badger licence can only be complete once planning permission has been granted. This will impose a minor time constraint on the commencement of works on site. The licence method must be agreed with Natural England, and may impose more significant constraints.

Cumulative Effects

- 49. Proposals at this site are unique in the vicinity, as such, and despite relatively high levels of new residential development in the area, there are not considered to be any in combination effects.

Offsite Measures or Compensation

- 50. The final scheme is expected to result in a 21% net gain for biodiversity on-site, and to satisfy trading rules.
- 51. Additional, offsite compensation or contribution to an offsetting fund is therefore not considered necessary.

Enhancement

- 52. Opportunities to provide on-site enhancement will be detailed in the Biodiversity Management Plan and Landscaping Plan documents, to be finalised as a standard condition of planning.

Monitoring

- 53. The CEMP document will detail the role of an Ecological Clerk of Works (ECow) in overseeing protection measures.
- 54. The BMP document will identify the management specific monitoring which will be required in respect of habitat enhancement proposed. The LPA will require regular Monitoring Reports for the Site, to demonstrate that on-site habitats are meeting the condition scores targeted and thus achieving the specified BG value.

Policy and Legislation

- 55. Given the implementation of the mitigation set out above, it is anticipated that the proposals will comply with the relevant policy and legislation relating to wildlife and ecology.
- 56. A badger mitigation licence will be sought once planning permission has been secured, and any pre-commencement planning conditions relating to ecology have been discharged. This provision will derogate any offenses resulting from the disturbance to this species.

Conclusion

- 57. Mitigation to be agreed by standard conditions of planning will be able to address most significant effects resulting from the development.
- 58. Despite mitigation being put in place residual minor negative effects associated with disturbance to wildlife will be present throughout the quarrying process. Although it is noted that this disturbance will be periodic and post completion of quarrying works, the site will be left offering habitat of a greater value to species suffering this disturbance.
- 59. As this disturbance is unavoidable, its negative impact must be assessed against the wider planning balance.
- 60. The scheme is expected to result in a net gain (in excess of 10%) for biodiversity on-site. As such, no further compensation in relation to Biodiversity Gain will be required.

References

- Andrews H. L. (2011) *A habitat key for the assessment of potential bat roost features in trees*.
- Bat Conservation Trust (2016) *Bat Surveys for Professional Ecologists—Good Practice Guidelines*
- BSI (2013) British Standards Institute *BS 42020:2013 Biodiversity—Code of Practice for Planning and Development*.
- CIEEM (2017) *Guidelines for Ecological Report Writing* 2nd Edition. Chartered Institute of Ecology and Environmental Management, Winchester.
- CIEEM (2017) *Guidelines for Preliminary Ecological Appraisal*, 2nd edition. Chartered Institute of Ecology and Environmental Management, Winchester.
- CIEEM (2018) *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal*, 3rd edition. Chartered Institute of Ecology and Environmental Management, Winchester
- DEFRA (2021) Biodiversity Metric 3.0 Auditing and accounting for biodiversity Calculation tool macro free
- DEFRA (2021) Biodiversity Metric 3.0 Technical Supplement (1)
- DEFRA (2021) Biodiversity Metric 3.0 User Guide
- English Nature (2004) *Bat Mitigation Guidelines*. English Nature, Peterborough.
- Harris S, Jefferies D, Cheeseman C and Booty C (1994). *Problems with Badgers*, revised 3rd Edition. *RSPCA*, ISBN 0-901098-04-3
- Gent T and Gibson S, 2003, *Herpetofauna Workers' Manual*, JNCC
- IEA. (1995). *Guidelines for Baseline Ecological Assessment*. Chapman and Hall
- Hill et al. 2005, *Handbook of Biodiversity Methods*. Cambridge
- JNCC (2004) *The Bat Workers Manual*. 3rd Edition.
- JNCC (2010). *Handbook for Phase 1 Habitat Survey: A technique for environmental audit*.
- Ratcliffe, D.A. (1977) *A Nature Conservation Review*, Cambridge University Press