SLACC/TM/1

TOWN AND COUNTRY PLANNING ACT 1990

Application by West Cumbria Mining Ltd

Development of a new underground metallurgical coal mine and associated development at Former Marchon Site, Pow Beck Valley and area from Marchon Site to St Bees Coast

Planning Inspectorate Reference:	**APP/H0900/V/21/3271069**
Local Planning Authority Reference:	**4/17/9007**
Date of Inquiry:	**7th September 2021**

REBUTTAL PROOF OF EVIDENCE

AND APPENDIX

of

Dr Tony Martin MLI MCIEEM

Director, E3 Ecology Ltd

31 August 2021

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1. INTRODUCTION

1.1. My name is Antony Martin and I am a Director of E3 Ecology Ltd, a specialist ecological consultancy primarily working in the north east of England. I have a degree in Zoology from Newcastle University, a PhD in Applied Ecology from Nottingham University and I am a member of the Chartered Institute of Ecology and Environmental Management (CIEEM) and a Landscape Science member of the Landscape Institute. I have worked for over 30 years with Landscape Architects, Architects and Engineers specialising in the ecological assessment of developments.

1.2. I have undertaken work for Natural England, Scottish Natural Heritage, Countryside Council for Wales, the Environment Agency, Northumberland National Park and a range of NGOs and developers. I also manage a 90 acre rural site, which is used for developing innovative habitat creation and management techniques, and a lake and mire SSSI.

1.3. I have provided evidence on ecological issues at a number of public inquiries including Philpstoun Bing reclamation, Hardwick Views, Musselburgh Race Course, Durham Western Bypass, Selby Bypass, A12 Saxmundham to Wickham Market Improvements, North of Hertford Gravel, Cable Ski proposal at Stockton on Tees, Stannington Children's Hospital redevelopment, Leeds UD, a car sales site at Weetslade Colliery North Tyneside and housing at Whitehouse Farm, North Tyneside. I have prepared evidence and provided support at Public Inquiry for Hawkhurst Moor Colliery, Chorley OCCS, housing at New Hartley and Nunthorpe to Newby 400kV cable.

1.4. I was not granted access to the site until 23rd June 2021. On that date I was restricted to accompanied visits to the two woodland areas and the proposed main mine site, with other areas viewed from roads and public footpaths. At that time it was evident that additional ecological surveys were being undertaken.

1.5. On 6th August 2021 the Applicant provided additional survey work (Cumbria Metallurgical Coal Project Ecology survey update report BSG ecology August 2021, now appendix 2 to WCM/PS/2). I provided a letter, dated 9 August 2021, setting out a review of my key findings (Appendix 4 to Paul Bedwell's evidence, SLACC/PB/2).

1.6. In this rebuttal evidence I respond to the Proof of Evidence [WCM/PS/1] and Appendices [WCM/PS/2] of Dr Peter Shepherd.

1.7. I am providing evidence at the request of South Lakes on Climate Change (SLACC). In so doing, I am acting as an independent expert offering my services based on my expertise, set out above. The evidence which I have prepared and provide for this public inquiry is true to the best of my knowledge and belief. I confirm that the opinions expressed are my true and professional opinions based on the facts I regard as relevant in connection with the inquiry.

2. GAPS IN THE ECOLOGY INFORMATION

2.1. Assessment of the ecology chapter of the ES, dated November 2018 (CD 1.109), and its appendices, suggested a number of areas where data was not sufficient for the LPA to reliably assess the effects of the proposals prior to their October 2020 decision. I set many of these out in my letter in Appendix 4 to SLACC/PB/1. Some of these gaps have now been addressed, to some extent, in Dr Shepherd's proof (submitted 10 August 2021).

Bellhouse Gill Wood, Roskapark Wood and Benhow Wood Acknowledged as Supporting Ancient Woodland

2.2. I previously indicated that data in the ES Chpt 11 on the woodlands dissected by the proposed conveyor line appeared remarkably light given their Local Wildlife Site (LWS) status and the direct impacts from the conveyor line, and did not follow relevant meet guidance, particularly in relation to Bat Survey work (see para 4 of my letter SLACC/PB/2 pg 33). I also drew attention to the fact that it was evident to me from my short walk-over survey that all three woodlands – Roskapark LWS, Benhow Wood and Bellhouse Gill Wood LWS – should have been acknowledged as ancient woodland, but the ES Chpt 11 only highlighted the ancient nature of Bellhouse Gill Wood. (SLACC/PB2/2 pgs 34 and 36).

2.3. It now seems to be accepted that Roskapark Wood and Benhow Wood are also most likely ancient semi-natural woodlands. At paragraph 5.3 of his Proof of Evidence, Dr Shepherd's confirms:

> *"Although not noted on the MAGIC website, I consider much of Roskapark Wood and Benhow Wood likely to support ancient woodland, with the exception of the woodland immediately to the west of the St Bees Road, which has clearly been subject to quarrying activity in the past, and parts of the southern and northern fringes of Roskapark Wood which historic maps indicate were not under woodland in the mid 1800's. Despite the past quarrying and industrial activity to the west of St Bees Road, a woodland ground flora with species associated with ancient woodland sites has recolonised the previously quarried part of the site.*"

2.4. Despite this, the requisite detailed survey work and data on the ecology and history of the woodlands has still not been provided. I address this further below.

2.5. In the absence of detailed data from the Applicant on the ecology and history of the woodlands I contend that they should be treated as ancient woodlands in planning terms. I address the ancient woodlands in more detail below.

Other Deficiencies in the ES Chpt 11

2.6. Within the ES many adverse effects of the development are categorised as being of no more than local significance (Para 11.6.4 on P22 – between site and Parish value) when their potential impacts appear likely to be much more significant. There is a lack of a suitably precautionary approach where survey data compliant with guidance is lacking or development proposals are insufficiently detailed to accurately assess impacts.

2.7. There was no modelling of biodiversity net gain. This has now been provided and I address it below. Dr Shepherd provided some information in his proof and appendix about his calculation of biodiversity net gain, but I would have expected his evidence also to provide the underlying data that was input into the model used for the Biodiversity Net Gain Assessment at his Appendix 2, as well as the plans used to calculate areas, as this information is necessary to test the robustness of the calculation.

2.8. SLACC requested this information on 26/8/21 and WCM provided it in parts on 27/8/21. This provides the Excel metric and plans outlining the approach taken, but does not provide plans with annotated areas, or GIS plans that allow the metric to be audited in detail.

Lack of Information on Trenchless Cutting/Pipe Jacking

2.9. WCM's Statement of Case, under "ecological impacts", referred to ES Chpt 11 and the conclusion that there would be an impact on Bellhouse Wood from the installation of the conveyor, which "*would be adverse and only significant at a Local level*", and then stated: "*Trenchless constructions techniques for the buried conveyor under the woodland areas will significantly reduce the disturbance to woodland areas*" (para 118(a) CD 15.1).

2.10. This did not acknowledge that what was proposed was a significant change from the 'cut and cover' option assessed in the ES.

2.11. SLACC asked for details of the trenchless construction method on 10 June; 5 July; 24 July and 27 July 2021, but WCM provided very little information in response, see Appendix 3 to Paul Bedwell's proof (SLACC/PB/2 pgs 22-32).

2.12. On 10 August 2021 WCM 's evidence revealed, for the first time, that it intended to use "pipe jacking" as a construction method to tunnel under the woodlands (para 5.131 of the Proof of Evidence of Samuel Thistlethwaite).

2.13. I set out below the importance in planning and ecology terms of the impact on ancient woodlands. It is central to understanding the overall ecological impact of the proposal.

2.14. Given the likely significant effects of the "pipe jacking" proposal on the ancient woodlands, it should be subject to environmental impact assessment, but that has not been provided and it is not clear when it will be provided.

2.15. I am therefore currently unable to assess in any meaningful way the "pipe jacking" element of the proposal and am thus unable to provide my view on the extent of the impact of the proposal on the ancient woodland, or to comment on whether the degree of biodiversity loss in this area would be acceptable. To enable me to scrutinise these aspects of the proposed development, at a minimum, WCM needs to provide:

2.15.1. Information on what is proposed to be done and how it will be done, including detailed ecological survey information;

2.15.2. Information on the geology and soils, addressing the steeply inclined locations (I address the topography below);

2.15.3. Information on the likely hydrological impact; and

2.15.4. Information on the likely ecological impact.

2.16. Once this has been provided, I would be in a position to prepare my own evidence on the likely ecological impact.

3. BIODIVERSITY NET GAIN

3.1. I note that in October 2020 the Council, on the basis of the survey work provided and ES Chpt 11, concluded in terms of overall biodiversity the impacts on ecology were unacceptable (CD 4.5, Oct OR §7.308). The Council noted that "there would be no net loss of biodiversity as a result of the development" but recognised the development did not provide net gain for biodiversity, and although this might be achievable long term following restoration, "a possible net gain over a very long period cannot be afforded anything but negligible weight". (CD 4.5, Oct OR §7.307).

3.2. The Council's conclusion was not informed by biodiversity metrics, and they would not have been required for the initial application in 2017. However, biodiversity metrics are now regularly used as a tool to assess habitat change from a development and whether biodiversity net gain can be delivered[1]. It provides a useful opportunity to quantify whether a development will result in benefits to habitat biodiversity or a net loss and the timescales over which this may occur.

3.3. The National Planning Policy Framework ('NPPF') 2021 paragraph 174 provides that planning decisions "should contribute to and enhance the natural and local environment by "d) minimising impacts on **and providing net gains for biodiversity**, including by establishing coherent ecological networks that are more resilient to current and future pressures" (emphasis added).

3.4. When I first looked at the development proposals, I was surprised to see no significant off-site compensation proposals. Having worked on numerous schemes affecting brownfield sites I was well aware of the priority habitats and species of conservation significance associated with them, and the difficulty of conserving biodiversity during the life of a scheme that removes a large area of such habitat. As a rule of thumb, I would generally expect the required area of off-site compensation to be similar or larger than the area of better-quality habitats to be lost to the development.

3.5. In Appendix 2 of WCM/PS/2, Dr Shepherd provides a Biodiversity Net gain Assessment. The model, which was provided as a PDF, claimed to demonstrate a greater than 10% net gain in biodiversity units. It is notable that this is premised on any impacts on the ancient woodlands being reduced to a negligible level.

[1] https://cieem.net/i-am/current-projects/biodiversity-net-gain/

3.6. I have produced a spreadsheet from the data used by the Applicant, to seek to audit the findings (see Appendix 1 to this rebuttal). I then ran a simple sense check model (the Sense Check Model) based on habitat conditions anticipated at the start of coaling.

3.7. The Applicant's Biodiversity Net Gain Assessment is for 2048 and assumes that the site has been restored to nature conservation use. I consider it would be more appropriate to assist the inquiry by running the model through the life of the development to assess the net biodiversity changes at each stage. Metrics at the start of coal production, 10 years, 20 years and on completion of restoration would be appropriate and could be readily calculated from the data BSG have already collected.

3.8. In the metric provided by the Applicant, the model is run after the completion of mining and site restoration, such that semi-natural habitats have been recreated on the main mine site. The woodland and grassland created on the embankments, and 0.5ha of additional woodland, which would be undertaken during construction are therefore entered as having been created 25 years in advance. Taking all habitats into consideration the BSG model results in a **net gain of 29.33%.**

3.9. The metric does not balance. Open mosaic habitats on previously developed land, a habitat of high distinctiveness, are lost but not compensated for on a like for like basis, resulting in the red notification on page 13 of the Applicant's Biodiversity Net Gain Assessment (WCM/PS/2) that trading rules are not satisfied. This does not match with Dr Shepherd's evidence at paragraph 5.6 of his Proof of Evidence, where he states that open mosaic habitats will be created on the landscape mounds.

3.10. A simplistic modification of the model can be made to assess the changes in biodiversity on completion of construction of the mine and as it starts to operate (underlying data provided in pdf at Appendix 1, and also circulated in Excel). This is the Sense Check Model. At this time it would be 25 years before the site would be cleared and restored for nature conservation use, so a delay of 25 years is entered for the creation of these areas. For habitats created at the start of operations, such as those on the bunding, there is neither a delay in creation, nor are they created in advance.

3.11. With the Sense Check Model there is a **net loss of 8.88**% biodiversity units. This in my view casts significant doubt on the Applicant's claim that the development will result

in a net gain and plainly confirms that there will, in fact, be a substantial net loss of biodiversity at the site.

3.12. In light of the results of the Sense Check Model, the Applicant would be required to provide additional off-site compensation in order to give a 10% net gain during the life of the site. This equates, as an example, to a requirement for around 8ha of off-site arable land to be converted to wildflower grasslands.

4. ANCIENT WOODLAND

4.1. On behalf of SLACC I was granted accompanied access to the main application site and to parts of the conveyor route on 23rd June 2021. Negotiating access had proved to be a slow process, with WCM seeking to charge for access to the site (to cover the costs charged by the landowners to provide access) and resisting allowing unaccompanied access. The initial aim had been to undertake survey work at a time when dingy skipper butterflies would be in flight (mid May to mid June), and woodland herb species in flower, which is why SLACC requested access on 23rd April 2021.

4.2. Access was provided on 23rd June 2021 from 5am in the morning, which was greatly appreciated, to allow bird recording at the two woodland sites on the conveyor line. Other unaccompanied work was undertaken from public footpaths and roads, and bat detectors (Anabat Expresses) were left to run through the night in the publicly accessible area where Roskapark/Benhow Woods lie adjacent to the road. Work within the woodlands was considered to be sufficient to gain an initial assessment of their likely conservation value, a preliminary ecological appraisal, but not to provide detailed data. Perhaps 10 to 20 minutes were spent around each of the woodland conveyor crossing points.

4.3. From this brief visit it was immediately apparent that a competent ecologist would flag up these woodlands as a key constraint to project design that required detailed assessment for both habitats and species:

4.3.1. Areas of woodland were steeply sloping: such broadleaved woodland is much less likely to have been cleared for agriculture and the slopes makes agricultural improvements such as ploughing or application of fertiliser impracticable.

4.3.2. The current tree canopies are not of a nature to suggest plantation origin or significant forestry management.

4.3.3. Areas had a high coverage of ancient woodland indicator species, and the diversity of such species was sufficient to suggest a high likelihood of ancient woodland origins. Species such as sweet woodruff, wood millet, wood anemone, opposite leaved golden saxifrage and wood sedge were recorded which were picked in the 2021 studies but not in the work for the ES. The presence of such species, in addition to bluebell, ramsons and dog's mercury, provide more confidence that a woodland is likely to be ancient.

4.3.4. Whilst very localised areas had clearly been degraded one did not have to walk more than 25m to find good woodland communities.

4.4. Despite this, and as previously referred to, the ecological reports supporting the ES and the ES Ecology chapter suggest that only very superficial assessments were undertaken of the botany and habitats of the woodlands potentially affected by the conveyor route with the descriptions being more appropriate for a preliminary ecological appraisal rather than an ES development affecting Local Wildlife Sites and Ancient Woodland.

4.5. At paragraph 10 of my letter dated 9 August 2021 (Appendix 4 to Paul Bedwell's evidence, SLACC/PB/2 pgs 35-36), I provided a table summarising the data provided in the documents I reviewed on ancient woodland indicator species and the limitations identified in the survey work. For ease, I reproduce it:

<table>
<tr><th colspan="4">Records of Ground flora Species which tend to be associated with Ancient Woodland</th></tr>
<tr><th></th><th>ES and Appendices</th><th>2020 Update</th><th>2021 update</th></tr>
<tr><td>Roskapark</td><td>Ecology Chapter 11.7.67
Ramsons
Bluebell
Wood anemone
Primrose

Appendix 11.4 Botanical Appendix, no species lists for woodlands.
Appendix 11.6 No botanical data</td><td rowspan="3">No botanical species data for individual woods.

Table 2 for the conveyor route only lists ancient replantation (sic) woodland for woodland habitats on the conveyor route. It states The habitat is unchanged since the previous report. No previously unrecorded species were Identified.

And in respect to limitations to the survey it states:

Limitations to methods
2.8 There are not considered to be any significant limitations to the 2020 update survey. Access was available to all sections of the Site. 2.9

Survey was completed at the beginning of the usual growing season, however given the existing understanding of the Site and the habitat types present, this is not considered to be a significant limitation to the</td><td>Ramsons
Dog's mercury
Bluebell
Wood millet
Wood sedge
Remote Sedge
Sweet woodruff
Scaly Male fern
Soft shield fern
Hart's tongue fern
Primrose</td></tr>
<tr><td>Benhow</td><td>Appendix 11.4 Botanical Appendix, no species lists for woodlands.

Appendix 11.6 no botanical data.</td><td>Ramsons
Bluebell
Primrose
Opposite leaved golden saxifrage</td></tr>
<tr><td>Bellhouse Gill</td><td>Ecology Chapter 11.7.70 a very similar composition of trees and ground flora to those recorded in Roska Park Woodland….scaly male fern

Appendix 11.4 Botanical Appendix, no species lists for woodlands.</td><td>Ramsons
Dog's mercury
Bluebell
Wood sorrel
Wood sedge
Remote Sedge
Sweet woodruff
Scaly Male fern</td></tr>
</table>

	Appendix 11.6 Phase 1 Habitat Survey: Rail Loading Facility, Access and Conveyor Route Survey on 11th April and 22 May so ideal for woodland herbs. ***Ramsons*** ***Bluebell*** ***Wood anemone*** ***Male fern*** ***Primrose*** ***Limitations to methods*** *2.16 Full access was available to all parts of the site during the survey. The survey was completed in accordance with industry guidance, and therefore no significant limitations have been noted.*	*results of the survey undertaken.*	

4.6. Sufficient work was not undertaken to fully assess the habitats of the woodlands, and therefore a reliable assessment of the potential impacts of the development on them could not be undertaken. The BSG 2021 surveys are a great improvement on the earlier work, but do not provide the level of detailed mapping required to assess potential impacts from construction, operation and demolition of the scheme's infrastructure.

4.7. It is the case that man's influence over the years is evident, with very few late maturity trees in any of the woodlands, and localised areas of dumping (SW corner of Benhow Wood), grazing by livestock (Benhow Wood) and from the historic maps evidence of lime kilns (Benhow) and quarrying (Roskapark and Benhow). Below, in Figure 1, I produce a simple over-lay plan of features shown in the 1899 25" OS map (and supported by details in the first edition 1863 6" map) and the current aerial with the approximate construction alignment from Figure 1 Baseline Habitat Map, 6.08.21 from Appendix 3[2] of WCM/PS/2 (pg 58).

[2] Note this Appendix is listed as Appendix 2, but it is a separate document to the Biodiversity Net Gain Assessment, which is also listed as Appendix 2, so it must logically be Appendix 3.

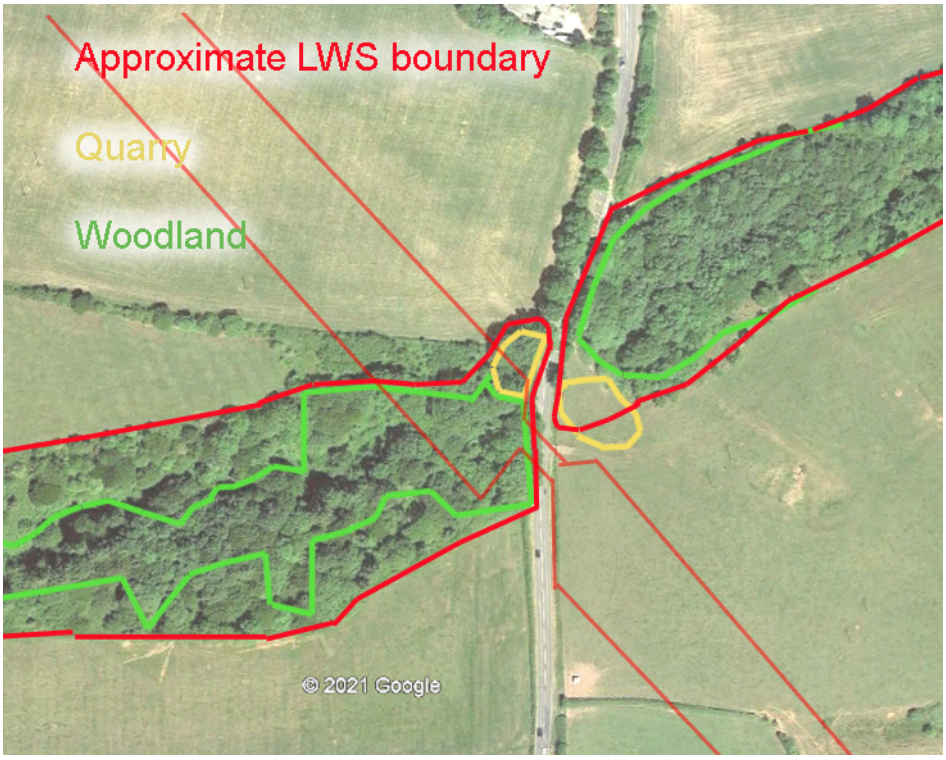


Figure 1: Over-lay plan of features shown in the 1899 25" OS map (and supported by details in the first edition 1863 6" map) and the current aerial view with the approximate construction alignment from Figure 1 of WCM/PS/2 Appendix 3 pg 58.

4.8. It can be seen that Roskapark Wood has expanded from its 19th C extent shown in green, but Benhow Wood remains similar. The combination of ancient woodland indicator species and early map evidence supports the conclusion that both are ancient woodlands. The LWS covers all the main woodland and both areas of historic quarrying. If plans such as this were then supported by detailed habitat and ancient woodland indicator species mapping then one could be in a position to start to assess the potential impacts of the development. No such information was available to the LPA through the ES, and it remains absent.

4.9. CIEEM ECIA Guidelines (September 2018) (CD 11.3) state:

> "*4.17 There may be cases where important habitat types are affected but they are currently in a degraded or unfavourable condition. Whilst the current baseline condition of a habitat may be sub-optimal, its potential value should be considered, including its possible contribution to conservation objectives. It is essential not to under-estimate the importance of habitats in sub-optimal condition where there is potential for restoration. It is also particularly important to conserve irreplaceable habitats, as reflected in the England National Planning Policy Framework (2018)82.*"

Key Survey Information Not Provided

4.10. Normally phase 2 botanical surveys or National Vegetation Classification (**'NVC'**) surveys would be undertaken when priority habitat broadleaved woodlands of this quality, that are also Local Wildlife Sites, may be directly affected by development.

4.11. Detailed survey should consider the potential zone of influence of the development. CIEEM ECIA Guidelines 2018 (CD 11.3) state:

> *"2.20 The 'zone of influence' for a project is the area over which ecological features may be affected by biophysical changes as a result of the proposed project and associated activities. This is likely to extend beyond the project site, for example where there are ecological or hydrological links beyond the site boundaries."*

4.12. Given that two linear woodlands with watercourses at the bottom are severed by the conveyor route and that species such as bats and birds are likely to use the whole of the woodlands including as movement corridors, the zone of influence for survey should clearly include the whole of the woodlands.

4.13. The National Planning Policy Framework (NPPF) (paragraph 180(c)) states:

> *"When determining planning applications, local planning authorities should apply the following principles: …… c) development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons[63] and a suitable compensation strategy exists; and ……."*
>
> *Footnote 63 states: "For example, infrastructure projects (including nationally significant infrastructure projects, orders under the Transport and Works Act and hybrid bills), where the public benefit would clearly outweigh the loss or deterioration of habitat."*

4.14. Natural England and the Forestry Commission's 'Standing Advice'[3] for planning authorities notes that:

> "'*wooded continuously' does not mean there's been a continuous tree cover across the whole site. Not all trees in the woodland have to be old. Open space, both temporary and permanent, is an important component of ancient woodlands"*
>
> *"Ancient woodlands smaller than 2 hectares are unlikely to appear on these inventories. You should use this guidance for all ancient woodlands and*

[3] Forestry Commission & Natural England. (2018). Ancient woodland, ancient trees and veteran trees: protecting them from development. Available at: https://www.gov.uk/guidance/ancient-woodland-and-veteran-trees-protection-surveys-licences (CD 11.4).

ancient and veteran trees whether they're on the inventories or not. They are updated and reviewed from time to time.

You should contact Natural England if a site has evidence of ancient woodland on it and is not on the inventory."

4.15. Given the presumption against development affecting ancient woodlands, additional information on the ecology, soils, hydrology and geology of these sites should have been provided to the LPA as part of the planning application. Sufficient design and construction information for the conveyor crossing points should have been provided by WCM to the consultant hydrologist and ecologist to undertake a robust assessment of the potential environmental impacts.

4.16. CIEEM ECIA Guidelines 2018 (CD 11.3) state:

"5.4 The assessment should include potential impacts on each ecological feature determined as 'important' (Chapter 4) from all phases of the project, e.g. construction, operation and decommissioning. Impacts should be characterised, through consideration of their magnitude and/or extent, the route through which they occur (whether direct, indirect, secondary or cumulative) and their duration and their reversibility. Positive impacts should be assessed as well as negative ones.

5.5 The assessment of impacts should take into account the baseline conditions to allow:

• a description of how the baseline conditions will change as a result of the project and associated activities

• the identification of cumulative impacts arising from the proposal and other relevant developments"

4.17. As I have set out, this Guidance has not been complied with. It was not complied with in the ES Chpt 11 (CD 1.109) and its appendices, and it has still not been complied with in Dr Shepherd's Proof of Evidence and Appendices which over-rely upon "pipe-jacking" being able to avoid any effects on the woodland.

4.18. In addition, it appears from the metric provided with Dr Shepherd's proof that no area for replanting to compensate for the loss of ancient Woodland is to be provided, and WCM has, I believe, indicated that they wish planning conditions 28–30 (that required compensatory planting at Benhow Wood among other measures) to be removed, because "pipe jacking" is to be undertaken. For the reasons already given on lack of requisite information, I cannot support that approach.

Findings: Topography

4.19. The local topography is complex, with steeply incised streams in places up to roughly 4m below adjacent field level. This makes accurate assessment of the effects on these woodlands through conveyor construction, operation and decommissioning, from the information provided, very problematic, particularly given the current lack of detailed field survey data. This has been exacerbated by the late introduction of trenchless construction and the very late reference to “pipe jacking”, and the lack of information about these techniques, which I address below.

4.20. I stated in my letter of letter dated 9 August 2021 (Appendix 4 to Paul Bedwell’s evidence, SLACC/PB/2 pg 38) that one only has to walk through these woodlands on the alignment of the conveyor route to be aware of the steep topography associated with the wooded gills, the streams at the base, and hence the vertical alignment required of the conveyor if all of the structure is to remain below ground. Whether the cut and cover options originally considered by the ES, or the directional drilling now proposed, there will be a major engineering operation with a high risk of changing the drainage over a large area of ground, particularly downstream of the conveyor, which will affect areas of woodland where little survey work has been undertaken but which are now acknowledged to be ancient woodland. I would request that the Inspector’s site visit includes standing at the low point of Belhouse Gill Wood at the point at which the conveyor would intersect with it to understand the topography in this location.

4.21. I have undertaken a simple analysis of the topography. I will set out my analysis, first, in relation to the cut and cover proposals assessed in the ES, as these may be the basis on which the scheme will be considered by the inquiry. I then make some points on the newly proposed trenchless construction/pipe jacking.

Topography and the Cut and Cover Scheme

4.22. Considering Bellhouse Gill Wood and the cut and cover proposals assessed in the ES I used the topography map provided at CD1.41 to generate a crude cross section (different vertical and horizontal scales) to illustrate the issues that do not seem to have been considered.

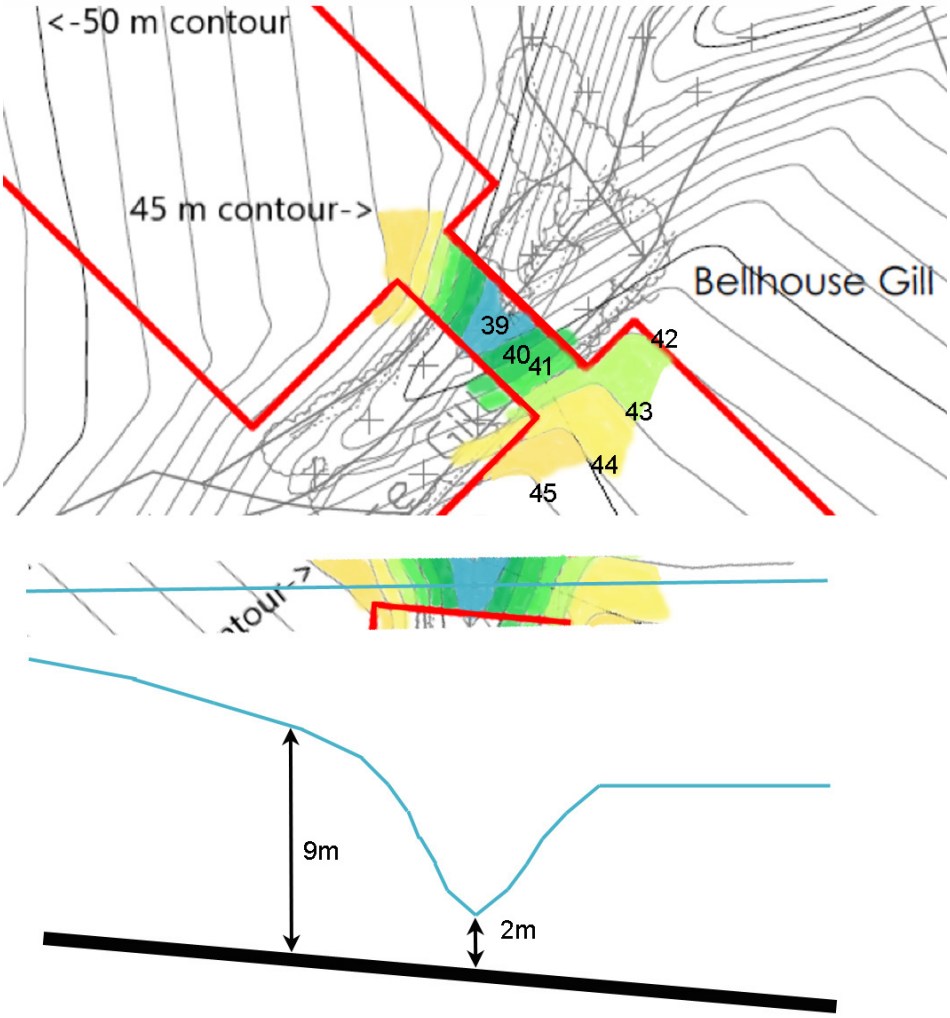


Figure 2: Annotated Extract of CD1.41 – Plan 869/AR/001 Rev C - Rail loading facility - Existing Plan and Topography showing estimated depth of top of conveyor below ground level

4.23. This suggests that in the upslope field, the top of the conveyor would be around 9m below ground level, so cut and cover would be a substantial engineering operation affecting a wide area of land. This level of detail does not seem to have been considered when assessing impacts on the woodland. Similarly, with pipe jacking there is insufficient detail on the transition between shallow cut and cover and the deeper tunnel to understand and assess ecological impacts.

4.24. The position in relation to Roskapark Wood and Benhow Wood is likely to be similar, with Benhow Wood being steeply incised and down-stream of the works, and areas of made ground likely to be affected. The detailed design is therefore likely to have a large influence on the extent of the habitats affected.

4.25. For these woodland areas robust baseline data have not yet been provided and therefore potential effects of the development still cannot be reliably assessed.

4.26. Data that should have been included within the ES appendices includes:

4.26.1. The mapping history of these woodlands.

4.26.2. Detailed mapping of ancient woodland indicator plant species in the woodlands.

4.26.3. A 3-d wireline model of the detailed topography in the vicinity of the two crossing points and the horizontal and vertical alignment of the proposed construction works and final conveyor tunnel. Detail only needs to be sufficient to undertake a precautionary assessment of which areas of woodland are likely to be directly or indirectly affected by the works, including changes in hydrology.

4.26.4. Information on the soils, subsoils and geology in the vicinity of the woodlands and the conveyor crossings.

4.26.5. Input from a professional hydrologist on likely changes in hydrology from conveyor construction, operation and decommissioning.

4.26.6. A 2-d model of the ancient woodland plant communities overlain onto a precautionary construction corridor developed from the 3-d model and areas likely to be affected by changes in hydrology.

4.26.7. An ecological assessment of the potential changes that may occur.

Topography and the Pipe Jacking Scheme

4.27. I have set out above the lack of any information on the 'pipe jacking' scheme, such that I am unable to engage in any meaningful way with this new proposed element of the development. It follows that I am therefore unable to provide my considered view on the impact of the proposal on the ancient woodland in respect of this issue.

4.28. I note that Dr Shepherd has stated at paragraph 5.5 of his proof that he considers the use of pipe jacking to tunnel under the woodlands will reduce impacts on these designated sites to a negligible level. Unless he has seen the information I set out above as necessary to make that conclusion, in my view I cannot see how he has been able to make any assessment.

4.29. Whilst the proposal for pipe jacking construction may appear to reduce potential impacts, because of how severe the impacts of cut and cover would be when

topography is properly considered, without further details of construction and the geology and hydrology of the areas affected this cannot be determined.

4.30. The topography again illustrates this. The Rail loading facility existing plan (CD1.41 Plan 869/AR/001) and topography of January 2018 indicates a level change between the field to the north of Belhouse Gill Wood and the stream at the bottom of around 7m. If the conveyor is a further 2m down, then the areas of land potentially affected by this element, and by the transition to shallow cut and cover construction, could be substantial, affecting the hydrology over a wider area, and requires more detail to assess.

Findings: Bats

4.31. In my letter dated 9 August 2021 (Appendix 4 to SLACC/PB/2 pg 38) I pointed out that, given that the ES identifies these woodlands as being the most important habitats directly affected by construction of the conveyor, one would expect full species surveys in keeping with the relevant national guidance. Bat transects and remote monitoring has only been undertaken on a seasonal basis, and bat remote monitoring and transect surveys do not seem to have covered the Roskapark/Benhow Woods area at all. These gaps have been covered, to some extent, by the additional ecological information now available. I recorded a similar range of species by Roskapark Wood as is now reported. ES Appendix 11.2 (CD 1.111) had no bat data for this area at all, and these surveys are still not compliant with guidance.

4.32. I pointed out that BCT survey guidance[4] recommends up to two survey visits per month (April to October) for transect surveys and remote monitoring for bat activity in three locations per transect for five days in each month for high suitability habitat for bats. The guidance identifies high quality foraging and commuting habitat (pg 35) as:

> *"Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge.*
>
> *High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined water courses and grazed parkland."*

4 https://cdn.bats.org.uk/pdf/Resources/Bat_Survey_Guidelines_2016_NON_PRINTABLE.pdf?mtime=20181115113931&focal=none Page 58 Table 8.3 (CD 11.5).

4.33. Given the likely zone of influence through factors such as disturbance during construction and hydrological changes, it is clearly reasonable to consider these woodlands as potentially high quality habitat and to undertake sufficient survey work to assess their value to bats, and hence the potential effects of development. Reports submitted still do not provide survey to guidance for Roskapark or any useful assessment of how bats are using these woodland corridors for foraging, roosting or commuting though the wider landscape.

Findings: Birds

4.34. In my letter dated 9 August 2021 (Appendix 4 to SLACC/PB/2 pg 38) I pointed out that the bird diversity and abundance, particularly in Roskapark/Benhow Wood, seems much lower than would be anticipated. The breeding bird survey appendix had 5 bird species recorded as likely to be breeding in the woodland, whereas when I left recording devices in the vicinity of the conveyor crossing point for around an hour after dawn on one occasion during my site visit it recorded the song of 20 species most of which have the potential to be nesting in the woodland. I reproduce the list below:

Roska Park and Benthow Wood

Wren
Chiffchaff
Blackbird
Yellowhammer
Carrion Crow
Pheasant
Blue Tit
Chaffinch
Bullfinch
Woodpigeon
Rook
Dunnock
Herring Gull
Great Tit
Blackcap
Robin
Coal Tit
Goldcrest

Greenfinch
Treecreeper
Lesser Whitethroat

4.35. The list includes lesser whitethroat, a species that is often over-looked by less experienced ornithologists.

4.36. At Bellhouse Gill Wood 6 breeding bird species were reported by BSG, whereas the songs of many more species were recorded as follows:

Bellhouse Wood
Goldfinch
Wren
Song Thrush
Chiffchaff
Woodpigeon
Carrion Crow
Pheasant
Blackcap
Dunnock
Blackbird
Chaffinch
Goldcrest
Blue Tit
Robin
Rook
Magpie
Coal Tit

4.37. I have a high degree of confidence that repeat breeding bird surveys, which should also cover all of the habitats potentially affected by construction impacts, plus an appropriate buffer, by a specialist ornithologist, would record a much higher diversity and abundance of breeding birds.

5. CONCLUSION

5.1. At present, insufficient information is available to assess robustly the conservation value of the woodlands and the species that they support, particularly bats and breeding birds, or the likely effects of the development on them. Insufficient information is available on the proposed construction methods for the conveyor line, and particularly on the horizontal alignment through these steep valley features, and no information is provided on the potential effects of introducing this structure on the hydrology of the adjacent ground and the water courses running through the centre of the woods.

5.2. The biodiversity metric indicates that additional off-site compensation would be required for the development to enhance habitat biodiversity during the operational phase of the development. NPPF paragraph 174(d) indicates that planning decisions should contribute to and enhance the local and natural environment by *"minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;*". In this case there would be a wait of over a generation before net gains started to be delivered, and the information is not provided to understand how the development would affect the ecological networks provided by the ancient woodlands severed by the conveyor route.

Declaration

The evidence which I have prepared and provide for this appeal reference APP/H0900/V/21/3271069 in this Rebuttal Proof of Evidence is true, and I confirm that the opinions expressed are my true opinions.

6. Appendix R1 – Sense Check Metric

The Biodiversity Metric 3.0 - Calculation Tool
Start page

Project details	
Planning authority:	
Project name:	West Cumbria Mine
Applicant:	
Application type:	
Planning application reference:	
Assessor:	
Reviewer:	
Metric version:	
Assessment date:	
Planning authority reviewer:	

Instructions

Main menu

Results

View all

Reset view

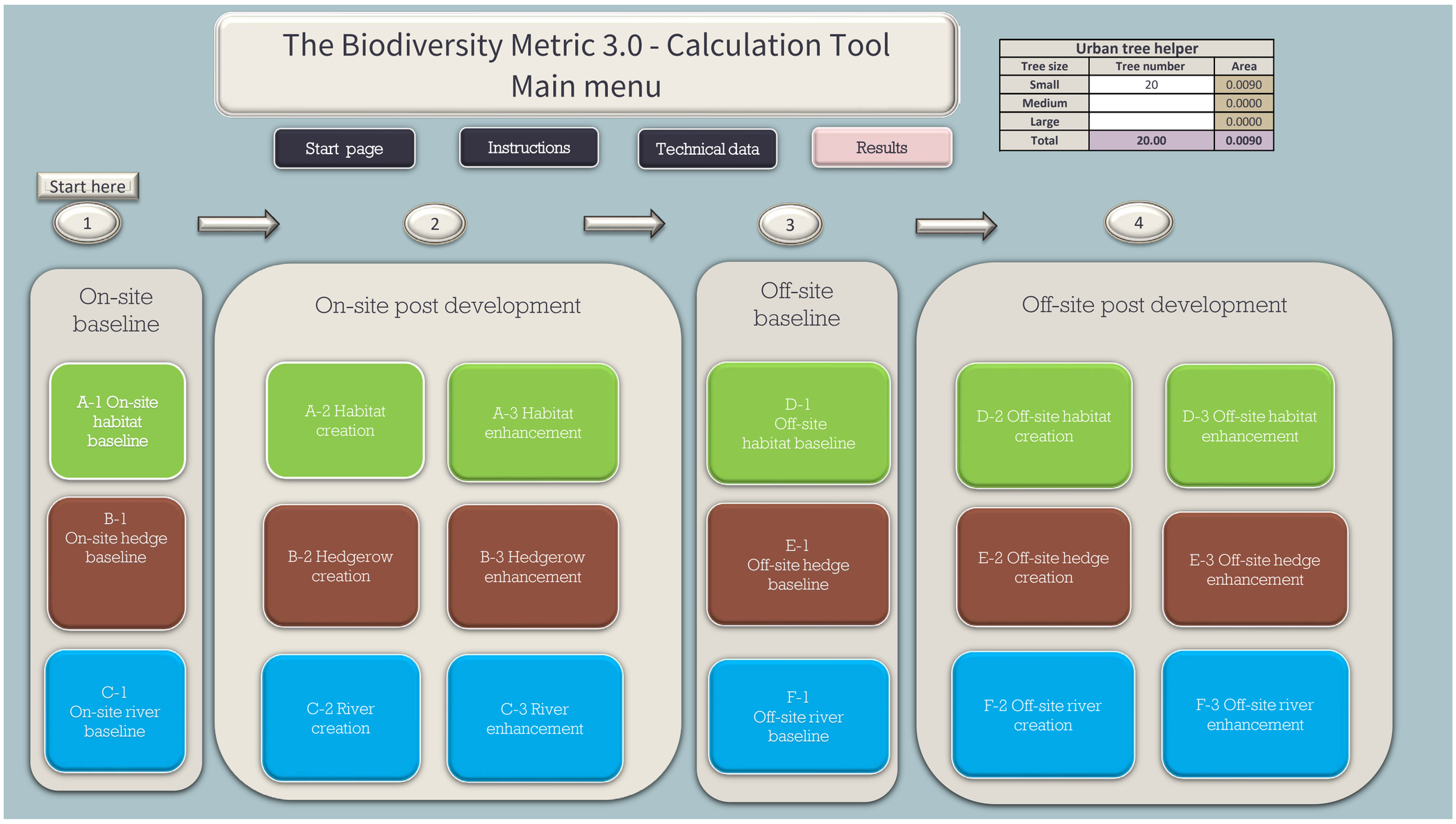
Cell style conventions	
	Enter data
	Automatic lookup
	Result

On-site baseline map — Insert

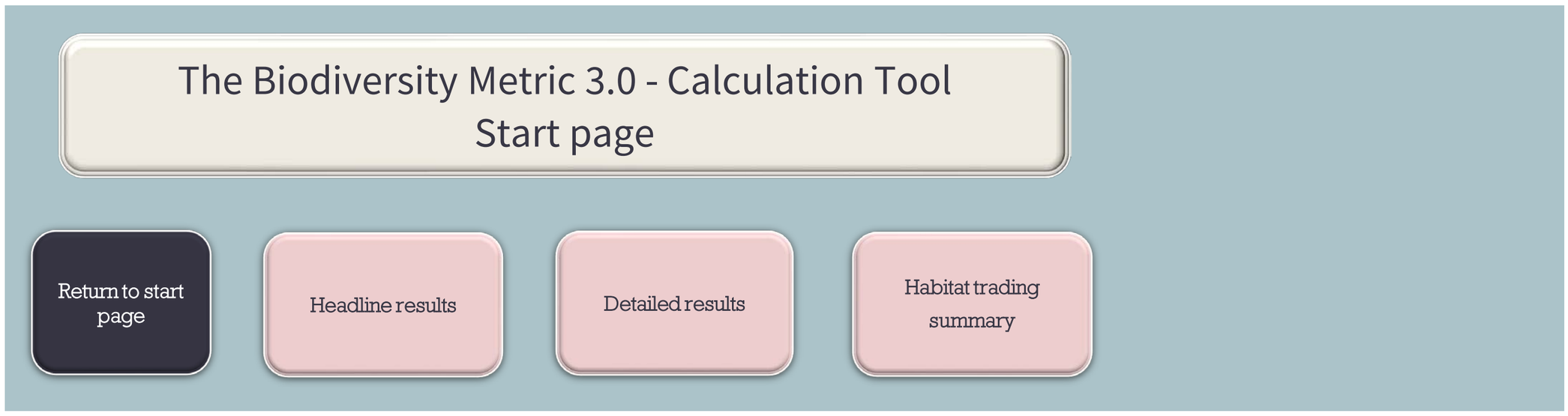
On-site post intervention map — Insert

Off-site baseline map — Insert

Off-site post intervention map — Insert



Urban tree helper		
Tree size	Tree number	Area
Small	20	0.0090
Medium		0.0000
Large		0.0000
Total	20.00	0.0090


The Biodiversity Metric 3.0 - Calculation Tool
Start page
Return to start page
Headline results
Detailed results
Habitat trading summary

West Cumbria Mine

Headline Results

Return to

On-site baseline	*Habitat units*	179.73
	Hedgerow units	3.28
	River units	0.00
On-site post-intervention (Including habitat retention, creation & enhancement)	*Habitat units*	161.90
	Hedgerow units	5.32
	River units	0.00
On-site net % change (Including habitat retention, creation & enhancement)	*Habitat units*	-9.92%
	Hedgerow units	62.06%
	River units	0.00%
Off-site baseline	*Habitat units*	29.76
	Hedgerow units	0.00
	River units	0.00
Off-site post-intervention (Including habitat retention, creation & enhancement)	*Habitat units*	69.19
	Hedgerow units	0.00
	River units	0.00
Total net unit change (including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	21.60
	Hedgerow units	2.04
	River units	0.00
Total on-site net % change plus off-site surplus (including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	12.02%
	Hedgerow units	62.06%
	River units	0.00%
Trading rules Satisfied?		No - Check Trading Summary

Return to results menu

Trading Summary

Distinctiveness Group	Trading Rule	Trading Satisfied?
Very High	Bespoke compensation likely to be required	Yes
High	Same habitat required	No
Medium	Same broad habitat or a higher distinctiveness habitat required	Yes
Low	Same distinctiveness or better habitat required	Yes

Very High Distinctiveness

Habitat group	Group	On Site Unit Change	Off Site Unit Change	Project wide Unit Change	Unit Losses
Grassland - Lowland dry acid grassland	Grassland	0.00	0.00	0.00	
Grassland - Lowland meadows	Grassland	0.00	0.00	0.00	
Grassland - Upland hay meadows	Grassland	0.00	0.00	0.00	
Heathland and shrub - Mountain heaths and willow scrub	Heathland and shrub	0.00	0.00	0.00	
Lakes - Aquifer fed naturally fluctuating water bodies	Lakes	0.00	0.00	0.00	
Sparsely vegetated land - Calaminarian grasslands	Sparsely vegetated land	0.00	0.00	0.00	
Sparsely vegetated land - Limestone pavement	Sparsely vegetated land	0.00	0.00	0.00	
Wetland - Blanket bog	Wetland	0.00	0.00	0.00	
Wetland - Depressions on Peat substrates (H7150)	Wetland	0.00	0.00	0.00	
Wetland - Fens (upland and lowland)	Wetland	0.00	0.00	0.00	
Wetland - Lowland raised bog	Wetland	0.00	0.00	0.00	
Wetland - Oceanic Valley Mire[1] (D2.1)	Wetland	0.00	0.00	0.00	
Wetland - Purple moor grass and rush pastures	Wetland	0.00	0.00	0.00	
Wetland - Transition mires and quaking bogs (H7140)	Wetland	0.00	0.00	0.00	
Woodland and forest - Wood-pasture and parkland	Woodland and forest	0.00	0.00	0.00	
Rocky shore - High energy littoral rock - on peat, clay or chalk	Rocky shore	0.00	0.00	0.00	
Rocky shore - Moderate energy littoral rock - on peat, clay or chalk	Rocky shore	0.00	0.00	0.00	
Rocky shore - Low energy littoral rock - on peat, clay or chalk	Rocky shore	0.00	0.00	0.00	
Rocky shore - Features of littoral rock - on peat, clay or chalk	Rocky shore	0.00	0.00	0.00	
Intertidal sediment - Littoral seagrass on peat, clay or chalk	Intertidal sediment	0.00	0.00	0.00	
		0.00	0.00	0.00	0.00

Very High Distinctiveness Summary

Very High Distinctiveness Units available to offset lower distinctiveness defecit	0.00

High Distinctiveness

Habitat group	Group	On Site Unit Change	Off Site Unit Change	Project wide Unit Change	Losses not yet accounted for
Grassland - Traditional orchards	Grassland	0.00	0.00	0.00	
Grassland - Floodplain Wetland Mosaic (CFGM)	Grassland	0.00	0.00	0.00	
Grassland - Lowland calcareous grassland	Grassland	0.00	0.00	0.00	
Grassland - Tall herb communities	Grassland	0.00	0.00	0.00	
Grassland - Upland calcareous grassland	Grassland	0.00	0.00	0.00	
Heathland and shrub - Lowland Heathland	Grassland	0.00	0.00	0.00	
Heathland and shrub - Sea buckthorn scrub (Annex 1)	Heathland and shrub	0.00	0.00	0.00	
Heathland and shrub - Upland Heathland	Heathland and shrub	0.00	0.00	0.00	
Lakes - High alkalinity lakes	Lakes	0.00	0.00	0.00	
Lakes - Low alkalinity lakes	Lakes	0.00	0.00	0.00	
Lakes - Marl Lakes	Lakes	0.00	0.00	0.00	
Lakes - Moderate alkalinity lakes	Lakes	0.00	0.00	0.00	
Lakes - Peat Lakes	Lakes	0.00	0.00	0.00	
Lakes - Ponds (Priority Habitat)	Lakes	0.65	0.00	0.65	
Lakes - Temporary lakes, ponds and pools	Lakes	1.81	0.00	1.81	
Sparsely vegetated land - Coastal sand dunes	Sparsely vegetated land	0.00	0.00	0.00	
Sparsely vegetated land - Coastal vegetated shingle	Sparsely vegetated land	0.00	0.00	0.00	
Sparsely vegetated land - Inland rock outcrop and scree habitats	Sparsely vegetated land	0.00	0.00	0.00	
Sparsely vegetated land - Maritime cliff and slopes	Sparsely vegetated land	0.00	0.00	0.00	
Urban - Open Mosaic Habitats on Previously Developed Land	Urban	-65.34	0.00	-65.34	-65.34
Wetland - Reedbeds	Wetland	0.00	0.00	0.00	
Woodland and forest - Felled	Woodland and forest	0.00	0.00	0.00	
Woodland and forest - Lowland beech and yew woodland	Woodland and forest	0.00	0.00	0.00	
Woodland and forest - Lowland mixed deciduous woodland	Woodland and forest	0.00	0.00	0.00	
Woodland and forest - Native pine woodlands	Woodland and forest	0.00	0.00	0.00	
Woodland and forest - Upland birchwoods	Woodland and forest	0.00	0.00	0.00	
Woodland and forest - Upland mixed ashwoods	Woodland and forest	0.00	0.00	0.00	
Woodland and forest - Upland oakwood	Woodland and forest	0.00	0.00	0.00	
Woodland and forest - Wet woodland	Woodland and forest	0.00	0.00	0.00	
Coastal lagoons - Coastal lagoons	Coastal lagoons	0.00	0.00	0.00	
Rocky shore - High energy littoral rock	Rocky shore	0.00	0.00	0.00	
Rocky shore - Moderate energy littoral rock	Rocky shore	0.00	0.00	0.00	
Rocky shore - Low energy littoral rock	Rocky shore	0.00	0.00	0.00	
Rocky shore - Features of littoral rock	Rocky shore	0.00	0.00	0.00	
Intertidal sediment - Littoral mud	Intertidal sediment	0.00	0.00	0.00	
Intertidal sediment - Littoral mixed sediments	Intertidal sediment	0.00	0.00	0.00	
Coastal saltmarsh - Saltmarshes and saline reedbeds	Coastal Saltmarsh	0.00	0.00	0.00	
Intertidal sediment - Littoral biogenic reefs - Mussels	Intertidal sediment	0.00	0.00	0.00	
Intertidal sediment - Littoral biogenic reefs - Sabellaria	Intertidal sediment	0.00	0.00	0.00	
Intertidal sediment - Features of littoral sediment	Intertidal sediment	0.00	0.00	0.00	
Intertidal sediment - Littoral muddy sand	Intertidal sediment	0.00	0.00	0.00	
		-62.88	0.00	-62.88	-65.34

High Distinctiveness Summary

High Distinctiveness Units available to offset lower distinctiveness defecit	2.46
Unit Defecit; Like for like not satisfied	-65.34

Medium Distinctiveness

Habitat Group	Group	On site unit change	Off Site Unit Change	Project wide unit change	Cumulative Broad Habitat Change
Cropland - Arable field margins cultivated annually	Cropland	0.00	0.00	0.00	0.00
Cropland - Arable field margins game bird mix	Cropland	0.00	0.00	0.00	
Cropland - Arable field margins pollen & nectar	Cropland	0.00	0.00	0.00	
Cropland - Arable field margins tussocky	Cropland	0.00	0.00	0.00	
Cropland - Cereal crops winter stubble	Cropland	0.00	0.00	0.00	
Grassland - Other lowland acid grassland	Grassland	0.00	0.00	0.00	68.16
Grassland - Other neutral grassland	Grassland	14.61	53.56	68.16	
Grassland - Upland acid grassland	Grassland	0.00	0.00	0.00	
Heathland and shrub - Blackthorn scrub	Heathland and shrub	0.00	0.00	0.00	5.73
Heathland and shrub - Bramble scrub	Heathland and shrub	0.00	0.00	0.00	
Heathland and shrub - Gorse scrub	Heathland and shrub	0.00	0.00	0.00	
Heathland and shrub - Hawthorn scrub	Heathland and shrub	0.00	0.00	0.00	
Heathland and shrub - Hazel scrub	Heathland and shrub	0.00	0.00	0.00	
Heathland and shrub - Mixed scrub	Heathland and shrub	5.73	0.00	5.73	
Lakes - Ponds (Non- Priority Habitat)	Lakes	0.00	0.00	0.00	0.00
Lakes - Reservoirs	Lakes	0.00	0.00	0.00	
Sparsely vegetated land - Other inland rock and scree	Sparsely vegetated land	-1.16	1.09	-0.07	-0.07
Urban - Brown roof	Urban	0.00	0.00	0.00	0.00
Urban - Cemeteries and churchyards	Urban	0.00	0.00	0.00	
Urban - Intensive green roof	Urban	0.00	0.00	0.00	
Woodland and forest - Other Scot's Pine woodland	Woodland and forest	0.00	0.00	0.00	12.04
Woodland and forest - Other woodland; broadleaved	Woodland and forest	12.04	0.00	12.04	
Woodland and forest - Other woodland; mixed	Woodland and forest	0.00	0.00	0.00	
Intertidal sediment - Littoral coarse sediment	Intertidal sediment	0.00	0.00	0.00	0.00
Intertidal sediment - Littoral sand	Intertidal sediment	0.00	0.00	0.00	
Intertidal Hard Structures - Artificial hard structures with Integrated Greening of Grey Infrastructure (IGGI)	Intertidal	0.00	0.00	0.00	
		31.23	54.64	85.87	

Medium Distinctiveness Summary

Medium Distinctiveness Units available to offset lower distinctiveness defecit	85.94
Medium Distinctiveness Broad Habitat Deficit to be offset by trading up	-0.07
Higher distinctiveness surplus units miunus Medium Distinctivenss Broad Habitat Defecit	2.39
Cumulative surplus of units	88.33

Low Distinctiveness

Habitat group	Group	On site unit change	Off Site Unit Change	Project wide unit change
Cropland - Cereal crops	Cropland	0.00	-16.00	-16.00
Cropland - Cereal crops other	Cropland	0.00	0.00	0.00
Cropland - Horticulture	Cropland	0.00	0.00	0.00
Cropland - Intensive orchards	Cropland	0.00	0.00	0.00
Cropland - Non-cereal crops	Cropland	0.00	0.00	0.00
Cropland - Temporary grass and clover leys	Cropland	0.00	0.00	0.00
Grassland - Modified grassland	Grassland	13.86	0.79	14.65
Grassland - Bracken	Grassland	0.00	0.00	0.00
Heathland and shrub - Rhododendron scrub	Heathland and shrub	0.00	0.00	0.00
Lakes - Ornamental lake or pond	Lakes	-0.04	0.00	-0.04
Sparsely vegetated land - Ruderal/Ephemeral	Sparsely vegetated land	0.00	0.00	0.00
Urban - Bioswale	Sparsely vegetated land	0.00	0.00	0.00
Urban - Allotments	Urban	0.00	0.00	0.00
Urban - Facade-bound green wall	Urban	0.00	0.00	0.00
Urban - Ground based green wall	Urban	0.00	0.00	0.00
Urban - Ground level planters	Urban	0.00	0.00	0.00
Urban - Extensive green roof	Urban	0.00	0.00	0.00
Urban - Introduced shrub	Urban	0.00	0.00	0.00
Urban - Rain garden	Urban	0.00	0.00	0.00
Urban - Sand pit quarry or open cast mine	Urban	0.00	0.00	0.00
Urban - Urban Tree	Urban	0.00	0.00	0.00
Urban - Sustainable urban drainage feature	Urban	0.00	0.00	0.00
Urban - Vacant/derelict land/ bareground	Urban	0.00	0.00	0.00
Urban - Vegetated garden	Urban	0.00	0.00	0.00
Woodland and forest - Other coniferous woodland	Woodland and forest	0.00	0.00	0.00
Coastal saltmarsh - Artificial saltmarshes and saline reedbeds	Coastal saltmarsh	0.00	0.00	0.00
Intertidal sediment - Artificial littoral coarse sediment	Intertidal sediment	0.00	0.00	0.00
Intertidal sediment - Artificial littoral mud	Intertidal sediment	0.00	0.00	0.00
Intertidal sediment - Artificial littoral sand	Intertidal sediment	0.00	0.00	0.00
Intertidal sediment - Artificial littoral muddy sand	Intertidal sediment	0.00	0.00	0.00
Intertidal sediment - Artificial littoral mixed sediments	Intertidal sediment	0.00	0.00	0.00
Intertidal sediment - Artificial littoral seagrass	Intertidal sediment	0.00	0.00	0.00
Intertidal sediment - Artificial littoral biogenic reefs	Intertidal sediment	0.00	0.00	0.00
Intertidal Hard Structures - Artificial hard structures	Intertidal	0.00	0.00	0.00
Intertidal Hard Structures - Artificial features of hard structures	Intertidal	0.00	0.00	0.00
Heathland and shrub - Sea buckthorn scrub (other)	Heathland and shrub	0.00	0.00	0.00
		13.83		-1.39

Low Distinctiveness Summary

Low Distinctiveness Net Change in Units	-1.39
Cumulative surplus of units	86.94

West Cumbria Mine

A-1 Site Habitat Baseline

Condense / Show Columns | Condense / Show Rows | Main Menu | Instructions

	Habitats and areas			Distinctiveness		Condition		Strategic significance				Ecological baseline	Retention category biodiversity value						Bespoke compensation agreed for unacceptable losses	Comments	
Ref	Broad habitat	Habitat type	Area (hectares)	Distinctiveness	Score	Condition	Score	Strategic significance	Strategic significance	Strategic Significance multiplier	Suggested action to address habitat losses	Total habitat units	Area retained	Area enhanced	Baseline units retained	Baseline units enhanced	Area lost	Units lost		Assessor comments	Reviewer comments
1	Grassland	Modified grassland	16.22	Low	2	Poor	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same distinctiveness or better habitat required	32.44	8.3871	0	16.77	0.00	7.83	15.67			
2	Grassland	Other neutral grassland	8.87	Medium	4	Moderate	2	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same broad habitat or a higher distinctiveness habitat required	70.96	0.4744	0	3.80	0.00	8.40	67.16			
3	Grassland	Other neutral grassland	0.17	Medium	4	Poor	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same broad habitat or a higher distinctiveness habitat required	0.68	0	0	0.00	0.00	0.17	0.68			
4	Heathland and shrub	Mixed scrub	1.17	Medium	4	Poor	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same broad habitat or a higher distinctiveness habitat required	4.68	0.7424	0	2.97	0.00	0.43	1.71			
5	Lakes	Ornamental lake or pond	0.018	Low	2	Poor	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same distinctiveness or better habitat required	0.04	0	0	0.00	0.00	0.02	0.04			
6	Lakes	Temporary lakes, ponds and pools	0.02	High	6	Poor	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same habitat required	0.12	0	0	0.00	0.00	0.02	0.12			
7	Sparsely vegetated land	Other inland rock and scree	0.289	Medium	4	Poor	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same broad habitat or a higher distinctiveness habitat required	1.16	0	0	0.00	0.00	0.29	1.16			
8	Urban	Developed land; sealed surface	7.25	V.Low	0	N/A - Other	0	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Compensation Not Required	0.00	1.0238	0	0.00	0.00	6.23	0.00			
9	Urban	Open Mosaic Habitats on Previously Developed Land	4.95	High	6	Moderate	2	Location ecologically desirable but not in local strategy	Medium strategic significance	1.1	Same habitat required	65.34	0	0	0.00	0.00	4.95	65.34			
10	Woodland and forest	Other woodland; broadleaved	0.34	Medium	4	Moderate	2	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same broad habitat or a higher distinctiveness habitat required	2.72	0	0	0.00	0.00	0.34	2.72			
11	Woodland and forest	Other woodland; broadleaved	0.4	Medium	4	Poor	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same broad habitat or a higher distinctiveness habitat required	1.60	0	0	0.00	0.00	0.40	1.60			
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West Cumbria Mine

A-2 Site Habitat Creation

Condense / Show Columns | Condense / Show Rows

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Check Areas - Area of development footprint and habitat creation exceeds the area of habitats lost

Post development/ post intervention habitats

			Distinctiveness		Condition		Strategic significance			Temporal multiplier						Difficulty multipliers					Comments	
Broad Habitat	Proposed habitat	Area (hectares)	Distinctiveness	Score	Condition	Score	Strategic significance	Strategic significance	Strategic position multiplier	Standard time to target condition/years	Habitat created in advance/years	Delay in starting habitat creation/years	Standard or adjusted time to target condition	Final time to target condition/years	Final time to target multiplier	Standard difficulty of creation	Applied difficulty multiplier	Final difficulty of creation	Difficulty multiplier applied	Habitat units delivered	Assessor comments	Reviewer comments
Grassland	Modified grassland	15.3	Low	2	Poor	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	1	0	0	Standard time to target condition applied	1	0.965	Low	Standard difficulty applied	Low	1	29.53	Reinstated agricultural grazing grassland following installation of conveyor. Reduced are from baseline is account for by additional planting.	
Grassland	Other neutral grassland	9	Medium	4	Moderate	2	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	5	0	0	Standard time to target condition applied	5	0.837	Low	Standard difficulty applied	Low	1	60.25	Grassland created on embankments during sconstruction phase.	
Heathland and shrub	Mixed scrub	0.11	Medium	4	Moderate	2	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	5	0	25	Check details- Delay in starting habitat in required condition?	30	0.343	Low	Standard difficulty applied	Low	1	0.30	Areas of scrub reinstated during restoration phase.	
Urban	Developed land; sealed surface	0.38	V.Low	0	N/A - Other	0	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	0	0	0	Standard time to target condition applied	0	1.000	Low	Standard difficulty applied	Medium	0.67	0.00	Areas of retained hard standings and access routes.	
Woodland and forest	Other woodland; broadleaved	2.99	Medium	4	Moderate	2	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	15	0	0	Standard time to target condition applied	15	0.586	Low	Standard difficulty applied	Low	1	14.02	Woodland created on embankments during construction phase.	
Woodland and forest	Other woodland; broadleaved	0.5	Medium	4	Moderate	2	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	15	0	0	Standard time to target condition applied	15	0.586	Low	Standard difficulty applied	Low	1	2.34	Woodland created during construction phase.	
Grassland	Other neutral grassland	8.08	Medium	4	Moderate	2	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	5	0	25	Check details- Delay in starting habitat in required condition?	30	0.343	Low	Standard difficulty applied	Low	1	22.20	Neutral grassland and scrub mosaic (80:20 ratio) created during restoration phase.	
Heathland and shrub	Mixed scrub	2.6	Medium	4	Moderate	2	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	5	0	25	Check details- Delay in starting habitat in required condition?	30	0.343	Low	Standard difficulty applied	Low	1	7.14	Neutral grassland and scrub mosaic (80:20 ratio) created during restoration phase.	
Lakes	Ponds (Priority Habitat)	0.09	High	6	Moderate	2	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	3	0	0	Standard time to target condition applied	3	0.899	Medium	Standard difficulty applied	Medium	0.67	0.65	Formal ponds within Main Mine Site designated to hold water all year round.	
Lakes	Temporary lakes, ponds and pools	0.65	High	6	Moderate	2	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	3	0	25	Check details- Delay in starting habitat in required condition?	28	0.369	Medium	Standard difficulty applied	Medium	0.67	1.93	Shallow and dynamic pond to be created within the Main Mine Site following restoration. These will be designated to provide good qualilty habitats.	
	Total area	39.70																	Total Units	138.36		

West Cumbria Mine

D-1 Off Site Habitat Baseline

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	Habitats and areas			Habitat distinctiveness		Habitat condition		Strategic significance				Ecological baseline	Retention category biodiversity value						Bespoke compensation agreed for unacceptable losses	Comments	
Baseline ref	Broad habitat	Habitat type	Area (hectares)	Distinctiveness	Score	Condition	Score	Strategic significance	Strategic significance	Strategic position multiplier	Suggested action to address habitat losses	Total habitat units	Area retained	Area enhanced	Baseline units retained	Baseline units enhanced	Area lost	Units lost		Assessor comments	Reviewer comments
1	Grassland	Modified grassland	1.18	Low	2	Poor	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same distinctiveness or better habitat required	2.36	0	1.18	0.00	2.36	0.00	0.00		Area to be used as reptile mitigation (Referred to as translocation site 2 in BSG reptile method statement)	
2	Grassland	Modified grassland	3.8	Low	2	Fairly Poor	1.5	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same distinctiveness or better habitat required	11.40	3.5108	0	10.53	0.00	0.29	0.87		Area to be used as reptile mitigation (Referred to as translocation site 1 in BSG reptile method statement)	
3	Cropland	Cereal crops	8	Low	2	N/A - Agricultural	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same distinctiveness or better habitat required	16.00			0.00	0.00	8.00	16.00		Off-site compensation on arable land	
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			12.98								Total Site baseline	29.76	3.51	1.18	10.53	2.36	8.29	16.67			

West Cumbria Mine

D-2 Off Site Habitat Creation

Condense / Show Columns | Condense / Show Rows

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Post development/ post intervention habitats							Strategic significance			Temporal risk multiplier						Difficulty risk multipliers				Spatial risk multiplier			Comments	
Broad Habitat	Proposed habitat	Area ha	Distinctiveness	Score	Condition	Score	Strategic significance	Strategic significance	Strategic position multiplier	Standard time to target condition/years	Habitat created in advance/years	Delay in starting habitat creation/years	Standard or adjusted time to target condition	Final time to target condition/years	Final time to target multiplier	Standard difficulty of creation	Applied difficullty multiplier	Final difficulty of creation	Difficulty multiplier applied	Spatial risk category	Spatial risk multiplier	Habitat units delivered	Assessor comments	Reviewer comments
Sparsely vegetated land	Other inland rock and scree	0.2892	Medium	4	Moderate	2	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	10	0	0	Standard time to target condition applied	10	0.700	Medium	Standard difficulty applied	Medium	0.67	Compensation inside LPA or NCA, or deemed to be sufficiently local, to site of biodiversity loss	1	1.09	Reptile mitigation habitats at Hutbank Landfill adjacent to MMS. Created by moving existing scree habitats within the Main Mine Site to Traslocation site 1	
Grassland	Other neutral grassland	8	Medium	4	Moderate	2	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	5	0	0	Standard time to target condition applied	5	0.837	Low	Standard difficulty applied	Low	1	Compensation inside LPA or NCA, or deemed to be sufficiently local, to site of biodiversity loss	1	53.56	grassland creation on arable land	
	Total Length	8.29																			Total Units	54.64		

West Cumbria Mine

D-3 Off Site Habitat Enhancment

Condense / Show Columns | Condense / Show Rows | Main Menu | Instructions

Baseline habitats											Proposed Habitat (Pre-Populated but can be overridden)		Change in distinctiveness and condition		Area ha	Post development post intervention habitats																	
																Strategic significance				Temporal multiplier						Difficulty multipliers					
Baseline ref	Baseline habitat	Total habitat area	Baseline distinctiveness band	Baseline distinctiveness score	Baseline condition category	Baseline condition score	Baseline strategic significance category	Baseline strategic significance score	Baseline habitat units	Suggested action to address habitat losses	Proposed Broad Habitat	Proposed Habitat	Distinctiveness change	Condition change		Distinctiveness	Score	Condition	Score	Strategic significance	Strategic significance	Strategic position multiplier	Standard time to target condition/years	Habitat enhanced in advance/years	Delay in starting habitat enhancement/years	Standard or adjusted time to target condition	Final time to target condition/years	Final time to target multiplier	Difficulty of enhancement category	Applied difficulty multiplier	Difficulty	Difficulty multiplier applied
1	Grassland - Modified grassland	1.18	Low	2	Poor	1	Low (In single Significance)	1	2.36	Same distinctiveness or better habitat required	Grassland	Modified grassland	Low - Low	Poor - Moderate	1.18	Low	2	Moderate	3	Area/compensation not in local strategic (no local strategy)	Low (Strategic Significance)	1	10	0	0	Standard time to target condition applied	10	9.700	Low	Standard difficulty applied	Low	1

Spatial risk multiplier		Habitat units delivered	Comments	
Spatial risk category	Spatial risk multiplier		Assessor comments	Reviewer comments
Compensation inside LPA or NCA, or deemed to be sufficiently local, to site of biodiversity loss	1	4.01	1) restored/enhanced as part of reptile mitigation strategy 2) translocation site 2)	

B-1 Site Hedge Baseline

Condense / Show Columns | Condense / Show Rows | Main Menu | Instructions

	UK Habitats - existing habitats			Habitat distinctiveness		Habitat condition		Strategic significance			Suggested action to address habitat losses	Ecological baseline	Retention category biodiversity value						Comments	
Baseline ref	Hedge number	Hedgerow type	Length KM	Distinctiveness	Score	Condition	Score	Strategic significance	Strategic significance	Strategic position multiplier		Total hedgerow units	Length retained	Length enhanced	Units retained	Units enhanced	Length lost	Units lost	Assessor comments	Reviewer comments
1		Native Hedgerow	0.313	Low	2	Moderate	2	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same distinctiveness band or better	1.25	0.077	0	0.31	0.00	0.24	0.94		
2		Native Hedgerow	0.123	Low	2	Moderate	2	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same distinctiveness band or better	0.49	0	0	0.00	0.00	0.12	0.49		
3		Native Species Rich Hedgerow	0.192	Medium	4	Moderate	2	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Like for like or better	1.54	0	0	0.00	0.00	0.19	1.54		
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B-2 Site Hedge Creation

Condense / Show Columns | Condense / Show Rows | Main Menu | Instructions

		Proposed habitats		Habitat distinctiveness		Habitat condition		Strategic significance			Temporal multiplier						Difficulty risk multipliers				Hedge units delivered	Comments	
Baseline ref	New hedge number	Habitat type	Length km	Distinctiveness	Score	Condition	Score	Strategic significance	Strategic significance	Strategic position multiplier	Standard Time to target condition/years	Habitat created in advance/years	Delay in starting habitat creation/years	Standard or adjusted time to target condition	Final time to target condition/years	Final Time to target multiplier	Standard difficulty of creation	Applied difficulty multiplier	Final difficulty of creation	Difficulty multiplier applied		Assessor comments	Reviewer comments
1		Native Hedgerow	0.296	Low	2	Moderate	2	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	5	0	0	Standard time to target condition applied	5	0.837	Low	Standard difficulty applied	Low	1	0.99		
2		Native Species Rich Hedgerow	0.6	Medium	4	Moderate	2	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	5	0	0	Standard time to target condition applied	5	0.837	Low	Standard difficulty applied	Low	1	4.02	These hedgerows will be newly planted around the margins of the landscaping bunds within the Main Mine Site.	
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