

CONFIDENTIAL Report

Assessment of Natural Heritage and Biodiversity
Impacts Relating to Planning Application
25/00418/EIAR

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Proposed Extension to Balmullo Quarry, Fife



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Scientific survey data will be shared with local biological records centre in accordance with the CIEEM (Chartered Institute of Ecology and Environmental Management) professional code of conduct.

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Table of contents

1	Introduction.....	4
1.1	Background	4
1.2	Relevant Documents.....	4
1.3	Site Visit	4
1.4	Report Format and Personnel	4
2	Assessment of EIAR Chapter 9	5
2.1	Introduction	5
3	Natural Heritage and Biodiversity Assessment.....	16
3.1	Habitats including Lucklaw Hill LWS.....	16
3.2	Breeding Birds including Schedule 1 Species	17
3.3	Bats	17
3.4	Pine Marten and Red Squirrel	17
3.5	Badger.....	17
3.6	Butterflies and Moths	18
4	Proposed Biodiversity Enhancement Measures Review and Assessment	18
4.1	Community Orchard	18
4.2	Bird and Bat Boxes	18
4.3	Pond and Amphibian Refugia	18
4.4	Stone Piles	18
4.5	Summary of Proposed Biodiversity Enhancements	18
	References	20

Appendices

Appendix A – Site Photographs	21
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1 Introduction

1.1 Background

Sweco have been commissioned by Fife Council to provide specialist advice relating to natural heritage and biodiversity impacts of the proposed extension to Balmullo Quarry to allow the council to assess and determine the planning application (25/00418/EIAR).

1.2 Relevant Documents

The assessment undertaken by Sweco primarily focused on the content of 'Chapter 9: Ecology' and the associated figures (BAL-09-0001-E to BAL-09-0007-E) of the Environmental Impact Assessment Report (EIAR) submitted as part of the planning application. This includes Appendix 9-2: Preliminary Ecological Appraisal and Follow on Survey Results, Appendix 9-3: Outline Biodiversity Enhancement and Restoration Plan (OBERP), and Appendix 9-4: Confidential Badger Report.

Other EIAR chapters were used for familiarisation with the site and proposal including: 'Chapter 1: Introduction', 'Chapter 3: Proposed Development' and 'Chapter 6: Alternatives'.

1.3 Site Visit

To help inform the assessment a site walkover was undertaken to ground-truth various aspects of the ecology chapter. The site visit was carried out by Sweco Senior Ecologist [REDACTED] MSc (Res) FISC Level 4 on 21 May 2026. The weather was sunny with a light breeze and the ambient temperature was 12°C. The walkover included the site and areas of proposed biodiversity enhancement and mitigation. Access was not possible to the active quarry site.

Relevant photographs from the site visit are included in Appendix A and referenced in the text as required.

1.4 Report Format and Personnel

The report includes commentary on the content of Chapter 9 of the EIAR and associated figures in Table 2-1 in Section 2 of this report. The comments are then summarised in Section 3 in terms of the overall assessment on Natural Heritage and Biodiversity from the proposed development along with an assessment of the proposed biodiversity enhancement measures. General recommendations have been made to help Fife Council determine the outcome of the Planning Application in respect to Natural Heritage and Biodiversity.

This report has been drafted by Sweco Senior Ecologist [REDACTED] MSc who has over 8 years' experience in ecological consultancy. This report was reviewed by Ecology North Lead [REDACTED] MSc MCIEEM CEnv who has 13 years' experience and approved by Principal Ecologist [REDACTED] MSc MCIEEM CEnv who has 13 years' experience in ecological consultancy.

2 Assessment of EIAR Chapter 9

2.1 Introduction

Table 2-1 below includes commentary on the natural heritage and biodiversity aspects of the Balmullo Quarry Extension EIAR. The table includes a reference to the relevant section of the EIAR along with the specific text to which the comment is attributed. Commentary has been included wherever the content has deviated from published guidance or where further clarity may be required.

Table 2-1: Commentary on Chapter 9 of the EIAR

Section Reference	Text Reference	Comments
9.18	<i>Two butterfly survey visits were completed, both within August 2023. Optimal months for butterfly surveying are May to early September, with July and August the prime surveying months. As the survey effort was undertaken in just one month, the known use of the site by butterflies may be incomplete.</i>	Given the potential interest of habitats at Lucklaw Hill Local Wildlife Site (LWS) for butterfly and moth species, a more comprehensive survey effort for invertebrates would have been beneficial to inform the ecological baseline and appropriate mitigation and enhancement. A survey effort across multiple months would have given more accurate data on species currently using the site, particularly due to the potential presence of green hairstreak (<i>Callophrys rubi</i>) which, as noted in the EIAR, is often under-recorded due to early emergence in the year.
9.20	<i>A full breeding bird survey was not completed, however, it is considered possible to evaluate the likely importance of the site for breeding birds based on the habitats present and using professional judgement and experience of the bird species and assemblages recorded on similar sites in Scotland.</i>	Given the permanent loss of natural habitats, particularly those within a designated LWS, a full suite of breeding bird surveys should have been undertaken to inform the ecological baseline of the site, as well as potential licensing requirements. This limitation is considered significant particularly as records of several Schedule 1 bird species were returned in the desk study and one, crossbill (<i>Loxia curvirostra</i>) was recorded on site. The bird survey guidelines [1] recommend a minimum of six surveys be undertaken unless supported with detailed and robust justification.
9.43	<i>An NVC survey of the proposed extension area only was deemed to be necessary due to the presence of habitats within the proposed extension area which are included in Annexe 1 of the Habitats Directive.</i>	The NVC survey appears to have extended north of the proposed extension area and does not cover the full area within the red line boundary, as shown on Figure BAL-09-0005-E. Extending the NVC to the east of the proposed extension area would have also been beneficial to provide an accurate baseline of the habitats within the proposed extension to the LWS.
9.61	<i>A pine marten survey was carried out within the proposed extension area and the wider land ownership of Breedon resulting in a buffer of at least 100m.</i>	Since the survey was undertaken NatureScot guidance [2] has been updated to recommend a 250m buffer for pine marten (<i>Martes martes</i>) surveys.
9.63	<i>A breeding bird walkover survey was undertaken on the 7th of July 2023, using modified Common Birds Census methodology as outlined in Bibby et al. (2000) and Gilbert et al. (1998).</i>	See above comment regarding section 9.20.

Section Reference	Text Reference	Comments
9.72	<i>Two butterfly surveys were undertaken within suitable habitat present within the proposed extension area and the wider land ownership of Breedon resulting in a buffer of at least 50m using a modified approach of the UK Butterfly Monitoring Scheme.</i>	See above comment regarding section 9.18.
Table 9-3	<i>[Statutory Designated Sites] Not considered further within this assessment due to distance from site and no clear route to impact or continuous natural habitat connectivity to site.</i>	Regarding sites designated for birds, this justification is not clear. Goose species in particular are known to travel up to 20km from roost sites to forage in agricultural fields [3]. However, it is noted that NatureScot have indicated that they do not consider impacts to be likely.
Table 9-5	<i>Areas of bracken Pteridium aquilinum are mainly located within the proposed extension area, with the ground flora reflective of the acid grassland habitat described above. The NVC classification for this habitat is U20 – Pteridium aquilinum – Galium saxatile community.</i>	An area to the east of the proposed extension is mapped incorrectly as g1c 11 – bracken with scattered trees. A large proportion of this area is dominated instead by bilberry (<i>Vaccinium myrtillus</i>) with bell heather (<i>Erica cinerea</i>) and should therefore be mapped as h1a5 11 lowland dry heath (Appendix A – Photograph 1). The area this covers makes up a large part of the area being proposed for bracken control in the OBERP. During the site visit, additional species were observed in the areas of bracken within the proposed expansion area and to the east of this, including bluebell (<i>Hyacinthoides non-scripta</i>), wood-sorrel (<i>Oxalis acetosella</i>) and honeysuckle (<i>Lonicera periclymenum</i>). Chickweed-wintergreen (<i>Lysmachia europaea</i>), a plant with a localised distribution, was also present in many areas of bracken to the east of the extension area. Full species lists to accompany the findings of the UKHab and NVC surveys are not included in the report and would be useful for a complete interpretation of the habitats.
9.128	<i>The UK Habitat Classification (UKHAB) and NVC surveys did not record any rare plant species per se, although the constituent species of habitats such as lowland heathland including bell heather, heather and bilberry are uncommon due to the restricted extent of lowland heathland in Fife.</i>	Chickweed-wintergreen (See above comment regarding Table 9-5) is present on site in areas of bracken; this species has a localised distribution [4].

Section Reference	Text Reference	Comments
9.132	<i>No INNS (invasive non-native species), as listed on Schedule 9, have been recorded within the site, wider land ownership or survey buffers.</i>	Schedule 9 refers to English legislation. In Scotland the Wildlife and Countryside Act 1981 as amended by the Wildlife and Natural Environment (Scotland) Act 2011 (WANE Act) covers all species considered non-native in Scotland. Further advice regarding INNS is provided in Annex B of NatureScot's Developing with Nature guidance [5] which provides information on non-native species that are considered particularly invasive in Scotland. Garden lady's mantle (<i>Alchemilla mollis</i>), which is listed under Annex B, was recorded in the car park area of the site (Appendix A, Photograph 2).
9.156 – 9.164	<i>Birds noted ... during one of the reptile surveys</i>	Making assumptions regarding probable/possible breeding status of bird species based on one site visit is not appropriate (See above comment regarding section 9.20).
9.167	<i>Taking into account the above considerations, the site as a whole is evaluated as being of local level of importance for breeding birds.</i>	Without survey data (See above comment regarding section 9.20) this assumption has no evidence.
9.175	<i>The existing quarry provides nesting opportunities for species such as peregrine falcon in the form of ledges.</i>	No surveys were carried out to confirm if a peregrine (<i>Falco peregrinus</i>) nest site will be lost as a result of the proposed development. While peregrines at the site may be habituated to high levels of disturbance and therefore may not be severely impacted if nesting outside of the extension area, surveys should be carried out to confirm whether any nest sites are within the extension area. Peregrines have high nest site fidelity and will return to the same site each year and as a Schedule 1 species disturbance to the birds away from the nest site must also be considered.
9.176	<i>Goshawk typically breed in large trees within mature woodland, and nesting sites are more likely located in the middle of a woodland rather than around the edge. For this reason, they are unlikely to be breeding within the proposed extension area, although they may use the site for foraging.</i>	Unlike peregrine, goshawk (<i>Accipiter gentilis</i>) is sensitive to human disturbance. When breeding they are considered to have a disturbance distance of 300-500m [6] which would extend well into the woodland north of the site and as a Schedule 1 species disturbance to the birds away from the nest site must also be considered Without adequate survey effort for goshawk, potential impacts to this species cannot be ruled out.
9.177	<i>All of the above species are not uncommon in Scotland and, even if present, they would be of local interest only. The site is therefore evaluated as being of local level of importance for Schedule 1 bird species.</i>	Without survey data (See above comment regarding section 9.176) this assumption has no evidence.

Section Reference	Text Reference	Comments
9.185	<i>No formal surveys have been undertaken to ascertain the use of the site for foraging or commuting bats.</i>	Current Bat Conservation Trust (BCT) guidance [7] recommends a combination of nighttime bat walkover (NBW) and automated static detector surveys to properly assess a sites' suitability for commuting and foraging bats. The report indicates the site was classified as "good" quality habitat for commuting and foraging bats (Appendix 9-2, Section 4.2.2.1). Therefore, the recommended minimum survey effort would be one NBW per season (spring, summer, autumn) and data from five consecutive nights, from an automated static detector, each month between April and October.
9.188	<i>Taking into account the relatively small size of the proposed extension and the low quality of the foraging resources present in the operational quarry the site is considered to be of likely local-level importance for foraging bats.</i>	Without survey data (See above comment regarding section 9.185) this assumption has no evidence.
9.219	<i>It is therefore proposed that the area (2.70 ha) immediately adjacent to the east of the existing Lucklaw Hill LWS which is controlled by the applicant would be added to the existing Lucklaw Hill LWS, replacing the area lost for the quarry extension. The extent of the Lucklaw Hill LWS would increase from 13.02ha (assuming a quarry extension is approved) to 15.72ha. The new area would benefit from the protections ascribed to Local Wildlife Sites in Fife and would be subjected to the same management regime as the existing LWS, maintaining the important habitats.</i>	The proposed additional area to Lucklaw Hill LWS contains a mosaic of habitats, primarily lowland dry heathland, as well as mixed woodland, bracken and gorse scrub. As noted above regarding section 4.2.1 the composition and condition of the habitat in the proposed LWS extension area compared to the areas that would be lost is unclear. The proposed LWS extension area already contains an ecologically valuable mosaic of habitats for which the existing LWS qualifies, including lowland dry heathland. Given the value of the existing habitats in this area, it is unlikely that it could be improved enough to serve as compensation for the loss of the section of the existing LWS, given that the value of its ecological baseline is already high. While enlarging the LWS to include the areas to the east would be positive, the mechanism through which the additional LWS area would be assured to receive protection and management is unclear, especially if its designation does not protect it from further expansion of the quarry.
9.220	<i>To replace the loss of 0.88ha of lowland dry heath within the Lucklaw Hill LWS, 0.8ha of lowland dry heath will be created to the west of the site within the LWS, and an additional 0.18ha of lowland dry heath will be created to the east of the site in the proposed new LWS area. The new lowland dry heath areas would be connected to the existing lowland dry heath that</i>	As noted above regarding Table 9-5, the areas of bracken within proposed restoration areas contain other native species including honeysuckle, wood sorrel and chickweed-wintergreen. The habitat is more ecologically diverse than comprising solely bracken, and these areas already have ecological value. While some bracken management could be beneficial to the

Section Reference	Text Reference	Comments
	<i>forms part of the mosaic habitat on the top of Lucklaw Hill. The area designated for conversion to lowland dry heath is currently dominated by bracken.</i>	site, the proposed bracken management and heathland creation/restoration are not sufficient to compensate for the loss of the habitats in the proposed extension area. As noted above, part of the area shown for heathland creation already contains heathland and is mapped wrongly on the UKHab figure. The bracken coverage is not as extensive as it is mapped.
9.222	<i>In addition, the restoration of the site would include the creation of suitable conditions for lowland heath and lowland acidic grassland firstly on the upper benches. It is considered that an additional 1.0ha of lowland heath/lowland acidic grassland mosaic can be created in these locations.</i>	Creation of new habitat in areas of the quarry that currently have low ecological value would be important to offset the loss of high-quality habitat. However, the proposals are lacking in details of how target habitats would be achieved. They are not outlined in the OBERP or shown on the figure BAL-09-0007-E. Areas of the quarry that are available for habitat creation should be shown on the figure. Achieving good quality lowland dry heathland and lowland dry acidic grassland in the quarry is likely to be challenging, and this is not reflected in the report. Further details on how these areas would be accessed for management and the feasibility of this process would be beneficial.
9.223	<i>In addition, the restoration of the site would include the creation of suitable conditions for new woodland in a mosaic with other habitats. It is considered that an additional 1.0ha of lowland mixed deciduous woodland can be created in these locations.</i>	There is no detail on the location or methods of implementation of this in the OBERP. Without intervention, existing scattered tree regeneration is likely to become woodland in the process of succession.
9.224	<i>Some areas of the Lucklaw Hill LWS and the proposed new LWS area have significant levels of bracken encroachment, in addition to the proposed bracken dominated heath restoration area. While bracken is a native species, it can behave in an invasive manner in some habitats where it dominates the ground layer at the expense of other open ground species. Removal of bracken is aimed at allowing heath to recover in these bracken dominated areas and expanding the heath habitat within the LWS.</i>	As noted above regarding Table 9-5 existing areas of bracken have more diversity than is reported. While some bracken management may benefit areas of heathland, the benefits from this intervention are considered likely to be marginal.

Section Reference	Text Reference	Comments
9.233	<i>Butterfly species recorded in the area in the desk study included wall and small heath butterfly species which use open grassland habitat, often where turf is broken or stony. To maintain these species preferred soil conditions there should be open areas with sparse vegetation and bare ground. The provision of small stone piles within the acid grassland will provide habitat for these butterfly species and for other associated invertebrates. Where practicable, turf from the proposed extension area will be relocated.</i>	This is not considered enhancement or sufficient mitigation. Stone piles/exposed stone are already present in numerous places across the proposed extension to the LWS (Appendix A Photographs 1-2). Different measures including provision of beneficial plants and habitats could be included in areas of lower biodiversity value to benefit butterfly and moth species. A greater survey effort for butterflies and moths could enable bespoke targeted measures for inclusion in the mitigation.
9.237	<i>The BERP should ensure that treelines are at least 20m wide where they run along the pasture land to the east and west of the site, to allow commuting and foraging for protected mammals, including badgers, birds and invertebrates. The area along the northern edge of the proposed quarry extension would be a narrower line of smaller scrub species that does not encroach too much on the heath but provides screening from the quarry. The BERP should also ensure that treelines connect the continuous woodland to the north of the site to the woodland patches by the public road to the south.</i>	This is a beneficial mitigation proposal in terms of increasing/maintaining connectivity across the site. The OBERP figure (BAL-09-0007-E) could be clearer in showing this as the land available to plant up to 20m wide woodland corridors does not seem obviously available.
9.239	<i>The above measures would create more areas of lowland heath, lowland acidic grassland and Other Broadleaved Woodland than would be lost and would place the management of the larger Lucklaw Hill LWS on a positive long-term footing through the implementation of practical management on a wider scale.</i>	See above comments regarding section 9.219.
9.242	<i>The retained areas would be protected from accidental damage by secure perimeter fencing.</i>	Unclear as to where this is proposed. If around LWS extension this would limit movement of wildlife i.e. badger and further consideration needs to be made to address this.

Section Reference	Text Reference	Comments
9.245-9.255	<i>The removal of vegetation... measures proposed above.</i>	Information on anticipated impacts and proposed mitigation is lacking due to insufficient survey effort. It is recommended that it is clear here that pre-construction surveys will be carried out to inform suitable mitigation within the BERP and a species protection plan (SPP) will be drafted if impacts are higher than currently determined.
9.253	<i>The mitigation measures proposed in respect of nesting birds would be followed and there would be pre-construction surveys undertaken. This would ensure that impacts on any potential crossbill nests are avoided. In the event that disturbance could be caused to a crossbill nest then a licence would be obtained from NatureScot.</i>	Needs to be clear here that crossbills do not nest in the core breeding bird season, they often nest over winter [8]. Additionally, as a schedule 1 species disturbance to birds away from the nest should also be considered. There is no licence granted from NatureScot allowing disturbance to an active crossbill nest, this should be covered by additional survey effort and the Ecological Clerk of Works (ECoW).
9.282	<i>The specific provision of small stone piles within the acid grassland will provide habitat for wall and grayling butterfly species and for other associated invertebrates.</i>	See above comment regarding section 9.233
Table 9-8	<i>[Ecological Feature – Lucklaw Hill LWS]</i>	Positive residual effects on the LWS are predicted in the table however, the mitigation proposed to achieve this outcome includes measures that have been questioned above. Specifically, the extension of the LWS (see above comment regarding section 9.219), control of bracken (see above comment regarding Table 9-5 and section 9.224) and habitat creation on the upper benches of the existing quarry (see above comment regarding section 9.222). Therefore, an adverse residual effect is possible.
Table 9-8	<i>[Ecological Feature – Breeding Birds]</i>	Residual effects are stated as being not significant in the table; however, without adequate survey effort (see above comment regarding section 9.20) the impacts have not been fully assessed. Therefore, an adverse residual effect is possible.
Table 9-8	<i>[Ecological Feature –Schedule 1 Birds]</i>	Residual effects are stated as being not significant in the table; however, without adequate survey effort (see above comment regarding sections 9.20, 9.175 & 9.176) the impacts have not been fully assessed. Therefore, an adverse residual effect is possible.
Table 9-8	<i>[Ecological Feature –Bats (foraging)]</i>	Residual effects are stated as being not significant in the table; however, without adequate survey effort (see above comment regarding section 9.185) the impacts have not been fully assessed. Therefore, an adverse residual effect is possible.

Section Reference	Text Reference	Comments
Table 9-8	<i>[Ecological Feature –Butterflies and Moths]</i>	Residual effects are stated as being not significant in the table; however, the inclusion of small stone piles is included as a main form of mitigation for butterflies and moths, which are already present on site (see above comment regarding section 9.233), and are not considered sufficient mitigation for these species.
9.286	<i>A range of enhancement measures are proposed as shown on Drawing BAL-09-0007-E and set out in Appendix 9-3: OBERP which comprise:-</i> <i>• three amphibian refugia;</i> <i>• a new pond;</i> <i>• eight locations for bird and bat boxes (2 bird and 2 bat at each); and</i> <i>• three stone piles.</i>	Without sufficient survey effort for breeding birds (See above comment regarding section 9.20) it is not possible to state that the inclusion of bird boxes will be an enhancement. If breeding bird surveys are carried out the exact number and type of bird boxes could be included in the BERP. Due to the existing presence of multiple stone piles (See above comments regarding section 9.233) this is also not considered an enhancement.
9.290	<i>Collectively, the avoidance, mitigation and compensation measures proposed in the OBERP, the revised quarry restoration scheme and this EclA would result in biodiversity gains, including no net loss of important habitats and the avoidance of significant impacts on notable and protected species through the implementation of appropriate measures, where necessary under licence.</i>	As noted in the comments on Table 9-8 above, impacts to certain species groups (birds, bats, butterflies and moths) and the Lucklaw Hill LWS are lacking evidence and significant residual effects cannot be ruled out.
Appendix 9-2 (3.2.2)	<i>The Habitat Condition Assessment was carried out in conjunction with the UKHab survey, through which the quality of habitats were measured using standardised habitat condition assessment criteria.</i>	The methodology used for the habitat condition assessment is unclear. A reference to the framework used should be provided.
Appendix 9-2 (4.2.1)	<i>Habitats</i>	Areas within and outside of the proposed extension area are not differentiated in this section, and it is difficult to discern the species composition and habitat condition respectively. Separation of the descriptions would enable clearer assessment of the baseline and target condition of compensatory habitat measures with respect to the habitats being lost.

Section Reference	Text Reference	Comments
Appendix 9-3 (Table 6-2)	[Objective 1.2] <i>Prior to starting work on converting the bracken area to dry heath, soil samples will be taken in the area to be converted to dry heath.</i>	Needs to be clear what the outcome will be if the soil is found to be unsuitable. An assessment should be made of the potential unintended impacts of sulphur fertiliser application to the surrounding mosaic of habitats. Translocation of displaced turfs from the existing heathland is not mentioned in the OBERP but would likely provide a more viable way of establishing new heathland.
Appendix 9-3 (Table 6-2)	[Objective 3.1] <i>Wildflower meadow planted in the open ground amongst the fruit trees. A native mix should be selected, appropriate for the dry, shallow soil. Paths should be mown through any long sward so that the trees can be accessed</i>	The grass in this area appears to be kept short by rabbit; rabbit-proof fencing may be needed to achieve a tall sward.
Appendix 9-4 (4.0)	<i>No active badger setts are present within the site. Those which do occur off-site are either situated next to areas of the site where no development activities are proposed (i.e. [REDACTED]) or they are sufficiently distant from the proposed extension (i.e. [REDACTED]).</i>	The active outlier sett [REDACTED] was recorded [REDACTED] from the site boundary. NatureScot guidance [9] states that works including piling or blasting can cause disturbance up to 100m. Unless it can be shown that this sett is 100m from any proposed blasting areas then it is not sufficiently distant.
Appendix 9-4 (5.1)	<i>The outlier sett at [REDACTED] is present at a distance of [REDACTED] of site boundary and at this distance is unlikely to experience disturbance.</i>	See above comment regarding section Appendix 9-4 (4.0)
Figures		
BAL-09-0001-E UK HABITAT SURVEY	<i>[g1c – bracken]</i>	As noted in the comment on Table 9-5 above, the area mapped as bracken with scattered trees (g1c 11) to the northeast of the 'Land in Control of Applicant' should be mapped as lowland dry heath with scattered treed (h1a5 11)
BAL-09-0001-E UK HABITAT SURVEY	<i>[g1b6 – Other Upland Acid Grassland]</i>	All other relevant habitats recorded as lowland and as the site is <300m this is correct. Should be classified as Other lowland acid grassland (g1d)

Section Reference	Text Reference	Comments
BAL-09-0005-E NATIONAL VEGETATION CLASSIFICATION SURVEY	<i>[National Vegetation Classification (NVC)]</i>	The extent of the NVC survey does not match the Proposed Extension Boundary.
BAL-09-0007-E OUTLINE BIODIVERSITY ENHANCEMENT AND RESTORATION PLAN	<i>[Line of Trees]</i>	While it is noted this is only an outline plan the figure does not suggest including 20m wide lines of trees would be feasible in many places. As this habitat creation is important to retaining/improving connectivity across the site the feasibility of this should be more clearly shown.
BAL-09-0007-E OUTLINE BIODIVERSITY ENHANCEMENT AND RESTORATION PLAN	<i>[Bracken Control Area]</i>	As noted in the comments on Table 9-5 and UK Habitat Survey figure, this area is not currently dominated by bracken. While bracken control may still be possible this should not be considered a significant biodiversity enhancement measure unless it can be clearly shown how the other species will be protected in this area.

3 Natural Heritage and Biodiversity Assessment

Overall, the EIAR report is considered broadly successful in predicting the impacts of the proposed development on natural heritage and biodiversity. However, survey effort for certain protected species is lacking when compared to published guidance meaning the assessment of the impacts is not robust. Furthermore, it could be made clearer in 'Chapter 6: Alternatives' whether an alternative option has been explored where less ecologically sensitive land adjacent to the site comprising pasture grassland is purchased and used for expansion of the quarry.

The subsections below summarise where surveys and/or mitigation are lacking in assessing residual effects on Natural Heritage and Biodiversity as a result of this proposed development.

3.1 Habitats including Lucklaw Hill LWS

Surveys for habitats on site were generally good with only minor inconsistencies. However, surveys within the area of the proposed LWS expansion were lacking, particularly the NVC data. Furthermore, the method used for condition assessing habitats was not clear, with no methodology or species list provided to justify condition. Therefore, while the loss of habitats is considered to be accurately assessed the proposed mitigation is not clearly justified and an assessment of the impacts post-construction is lacking evidence.

The loss of habitats within the LWS is not considered to be suitably mitigated within the EIAR proposals. As discussed above, the survey effort within the LWS expansion area was considered lacking in assessing the loss of habitats against the newly created ones. Areas marked for bracken control are already dominated by other species which may be damaged by control methods. Irrespective of the habitats present, extending the LWS boundary is considered a superficial measure due to the fact that the current LWS has been encroached on by the quarry once in the past and proposed again now. Without proving that the LWS will not be encroached on in the future this is not considered adequate mitigation.

While it is understood that the OBERP is an outline plan and a detailed BERP will be produced. It is considered lacking in outlining achievable goals in regards to several items, notably the creation of heathland and acid grassland on the upper benches of the existing quarry and the inclusion of 20m wide lines of trees around the site. These are not currently obviously achievable within the OBERP.

National Planning Framework 4 (NPF4) Policy 3 [10] states that developments should "conserve, restore and enhance biodiversity, including nature networks so they are in a demonstrably better state than without intervention". The current proposals are not considered sufficient to meet this statement. Without including areas of modified grassland to the east and west of the site within the LWS extension it is considered unlikely that an adequate level of enhancement could be achieved. More effort could also be made to create new habitats on the existing quarry benches. This would need to be clearly achievable but could benefit species diversity on site.

Therefore, an adverse residual effect for the LWS is considered likely.

3.2 Breeding Birds including Schedule 1 Species

Only one targeted survey for breeding birds was undertaken when a minimum of six are recommended [1] without robust evidence for a reduced effort, which is not considered appropriate within a LWS.

Impacts to breeding birds could not therefore be accurately determined based on one targeted survey and incidental recordings. Furthermore, as schedule 1 species are likely to be present based on the results of the desk study and incidental recordings (crossbill, peregrine and goshawk in particular) impacts to these species are also considered to be possibly more significant than identified in the EIAR.

It is concerning that the report includes reference to a NatureScot licence to disturb Schedule 1 bird species. Such a licence does not exist in regard to construction impacts, only for surveys which may disturb a Schedule 1 species. The proposed mitigation for breeding and Schedule 1 birds is considered insufficient due to the lack of survey effort discussed above.

Therefore, an adverse residual effect for birds is possible.

3.3 Bats

Survey effort for roosting bats and proposed mitigation is considered sufficient.

No surveys were undertaken for commuting and foraging bats despite the habitat being classified as “good quality”. Following BCT guidelines the recommended minimum survey effort would be one NBW per season (spring, summer, autumn) and data from five consecutive nights, from an automated static detector, each month between April and October. Without these surveys an assessment of the importance of the site for commuting and foraging bats cannot be made.

Despite the lack of survey effort the inclusion of 20m wide lines of trees which will function as linear commuting routes is noted. The inclusion of the community orchard and pond will also benefit foraging bats.

Therefore, an adverse residual effect for bats is possible.

3.4 Pine Marten and Red Squirrel

Survey effort for pine marten and red squirrel considered sufficient for the guidance at the time of the assessment, pine marten survey guidance now recommends a 250m buffer [2] which should be used for the pre-construction surveys.

3.5 Badger

Survey effort for badger is considered sufficient.

Impacts to the outlier sett [REDACTED] from the site are not adequately assessed. Unless it is clearly shown that no blasting will be undertaken within 100m of this sett then disturbance is considered likely.

The inclusion of 20m wide lines of trees is important in mitigating impacts to this species by improving connectivity.

3.6 Butterflies and Moths

Surveys for butterflies and moths were restricted to two surveys in August. A survey effort across multiple months would have given more accurate data on species currently using the site, particularly due to the potential presence of green hairstreak which, as noted in the EIAR, is often under-recorded due to early emergence in the year.

The proposed mitigation for these species is linked to the habitat creation discussed in section 3.1. The issues outlined there are relevant to creating suitable habitat for these species.

Therefore, an adverse residual effect for butterflies and moths is possible.

4 Proposed Biodiversity Enhancement Measures Review and Assessment

The subsections below summarise the biodiversity enhancements listed in the EIAR and outline potential ways these could be improved.

4.1 Community Orchard

The inclusion of a community orchard is considered a good and suitable form of ecological enhancement. However, due to the prior land use of the area, soil depth may be an issue which is highlighted in the EIAR. If the soil depth is found to be unsuitable for trees, then an alternative location should be proposed and/or remediation to the currently proposed area.

4.2 Bird and Bat Boxes

The inclusion of bird/bat boxes is also considered a good form of ecological enhancement based on the habitats present however, the types of bird/bat boxes would be better informed through more targeted surveys for these species as discussed above. This information could be included in the BERP following further surveys.

4.3 Pond and Amphibian Refugia

Both the amphibian refugia and inclusion of a pond listed in the main text of Chapter 9 of the EIAR are then described as provisional in the OBERP. The inclusion of a pond is considered important in achieving an acceptable level of enhancement on site and again alternative locations should be proposed if this is not considered feasible. The pond should be designed to benefit invertebrate species.

4.4 Stone Piles

As discussed above in Table 2-1 the inclusion of stone piles for butterflies and moths is not considered an enhancement measure. Targeted planting for locally important butterfly and moth species would be considered more suitable, ideally in consultation with the local butterfly conservation group.

4.5 Summary of Proposed Biodiversity Enhancements

Overall, the biodiversity enhancements are not considered sufficient for a development of this size and nature. The loss of habitats within the LWS is not

considered to be sufficiently mitigated and in line with NPF4 the proposed development should include enhancements to leave it in a “demonstrably better state”. More effort could be made to create novel habitats on the upper benches of the existing quarry and through committing to the inclusion of a pond.

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- [9] NatureScot, "Standing advice for planning consultations - Badgers," 2024.
- [10] The Scottish Government, "National Planning Framework 4," The Scottish Government, Edinburgh, 2023.

Appendix A – Site Photographs

	
Photograph 1 – Area dominated by Bilberry	Photograph 2 – Garden lady's mantle recorded on site
	
Photograph 3 – Existing rock pile	Photograph 4 – Exposed rock in LWS extension area

