GOULD ECOLOGY

Ecological Consultants

Proposed Quarry Extension

Land adj. Rushacre Quarry
Narberth
Pembrokeshire
SA67 7ET

Preliminary Ecological Appraisal

November 2022

(Version 1- Final)

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Extension to existing quarry	Rushacre Quarry, Narberth, Pembrokeshire SA67 7ET Central Grid Reference: SN 10704 15644	Mr Gwyn James	Sept 2022

Fieldwork	**Personnel**	**Date**
Extended Phase 1 Habitat Survey	Richard Gould ACIEEM MA BSc	6th Oct 2022

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Disclosure

"The information which we have prepared and provided is true, and has been prepared and provided in accordance with the Chartered Institute of Ecology and Environmental Management's (CIEEM) Code of Professional Conduct. I confirm that the opinions expressed are our true and professional bona fide opinions"

Signed

Richard Gould

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List of Figures and Tables

Executive Summary

Project Details: Proposed extension to Rushacre Quarry, Narberth, Pembrokeshire SA67 7ET

Site Description: The site was an area of an agricultural grassland field immediately to the south of the existing quarry.

Survey Methods: Extended Phase 1 Habitat survey conducted on the 6th October 2022.

Key Findings:

Designated Sites

The site was located 1.5km from the Eastern Cleddau SSSI. A small water-course which drains into the SSSI occurred approximately 150m to the north of the site.

Habitats

The land affected by the proposals comprised improved grassland, disturbed ground and small, isolated areas of bramble scrub of ecological value at the *site* scale only.

Hedges on the field margins were priority habitats of ecological value at the *regional* scale.

Protected and Notable Species

The land affected by the proposals had very limited value to any protected or priority species. If left unmanaged, the grassland could potentially support nesting birds, grass snake (occasionally) and common amphibian species.

Hedges on the field margins had potential value to bats, dormice, nesting birds, reptiles and invertebrates. No evidence of badger was noted

Invasive Species.

No non-native invasive species were noted within the land affected by the proposals, but a stand of *Montbretia crocosmia x crocosmiiflora* (a Schedule 9 listed invasive plant was noted adjacent to the quarry access track.

Appraisal:

In the absence of mitigation, development at the site could cause the following adverse ecological impacts:

- Pollution of the Eastern Cleddau SSSI;
- Damage to hedges on the field margins;
- Disturbance to nesting birds and reptiles (low risk);
- Spreading of *Montbretia crocosmia* off site (if works to this area of track are proposed).

Recommendations Summary: *(Refer to Section 7 for full details):*

Mitigation

Pollution controls shall be implemented during operation of the quarry;

Tree root protection areas of the boundary trees and hedges shall be protected from disturbance.

Working methods for minimizing the risk of disturbing nesting birds or reptiles shall be implemented. As a precaution, ongoing checks of the area for new badger activity shall be conducted by site staff.

Ecological Enhancement

Proposals for delivering ecological enhancement at the site include allowing natural regeneration of buffer strips, new planting of native species and/ or installation of bat and bird boxes on boundary trees.

In addition, further habitat creation could be implemented at a future time in quarried areas no longer in use.

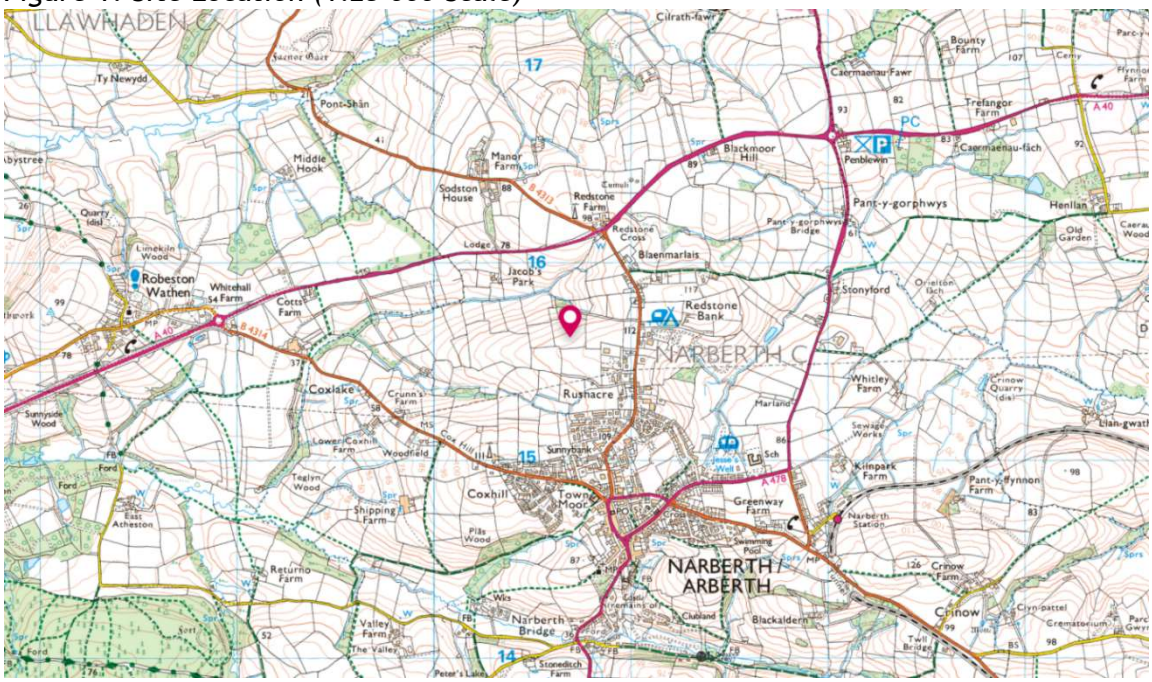
1 Introduction and background

1.1 In September 2022, Gould Ecology were commissioned to undertake a Preliminary Ecological Appraisal (PEA) on land adjacent to Rushacre Quarry, Narberth, Pembrokeshire SA67 7ET.

1.2 The purpose of the study was to accompany a planning application for the proposed extension of the existing quarry into an adjacent agricultural field.

1.3 The site was located on land at Rushacre, between the town of Narberth (to the south) and the A40 (to the north), as shown in Figure 1, below.

Figure 1: Site Location (1:25 000 Scale)



Report aims

1.4 The aims of this report were to:

- Identify and describe the habitats and ecological features within the site and immediate surrounding area;
- Identify any designated sites, priority habitats and protected or priority species which are present (or potentially present) within the zone of influence of the project and could be affected by the proposed works;
- Provide an appraisal of the significance and implications of any potential ecological impacts which may be caused by the project;
- Identify any further surveys or other work necessary to complete the impact assessment;
- Provide recommendations for delivering appropriate impact avoidance, mitigation and ecological enhancement strategies in line with legislative and planning requirements.

Key Terminology

1.5 The following Key Terms are used within this report:

- *'Ecological feature'* is the term used to denote any habitat, species or site under consideration within the ecological appraisal.
- *'Construction Zone'* – the area in which works are taking place – including those areas used for vehicle access and parking, materials storage, temporary buildings and compounds.
- *'Zone of Influence'* – the area in which ecological features may be affected by the proposed works. This may often extend beyond the construction zone, and will vary according to the feature described.
- *'Ecological impact'* is the term used to denote actions (associated with the project) resulting in changes to an ecological feature. For example – the action of removing a hedgerow.
- *'Effect'* – the outcome on an ecological feature from an impact. For example – the *effect* on dormouse populations of the removal of a hedgerow.

Personnel

1.6 The site visit and reporting were conducted by Richard Gould, ACIEEM MA BSc.

1.7 Richard is an ecological consultant with over 17 years' experience. He is an Associate member of the Chartered Institute for Ecology and Environmental Management and has extensive experience conducting Extended Phase 1 Habitat surveys, Phase 2 protected species surveys and Ecological Impact Assessments.

2 Legislative and Planning context

2.1 Wildlife and biodiversity in Wales are protected to varying degrees through legal statute and planning policy.

2.2 The following key wildlife legislation is relevant to this project:

- The **Conservation of Species and Habitats Regulations 2017 as amended by** the **Conservation of Species and Habitats Regulations (Amendment) (EU Exit) 2019.** Species protected under this legislation are known as European Protected Species (EPS).
- **The Wildlife & Countryside Act (1981, as amended);**
- **The Environment (Wales) Act (2016),** in conjunction with the **Wellbeing of Future Generations (Wales) Act (2015),** the **Nature Recovery Plan for Wales (2015**) and the **Planning (Wales) Act (2015);**
- The **Protection of Badgers Act (1992).**

2.3 A number of **Sites, Habitats and Species** are included within the legislation. The following paragraphs summarise the key aspects relating to each, with particular reference to those relevant to development proposals.

Designated Sites

2.4 ***Designated Sites*** are sites which are protected for their importance to biodiversity. These include:

- **Special Areas of Conservation (SACs), Special Protected Areas (SPAs)** and **Marine Protected Zones (MPZs)** – sites of international importance, protected under UK legislation *(The Conservation of Habitats and Species Regulations 2017 as amended);*
- **Sites of Special Scientific Interest (SSSIs**) and **National Nature Reserves (NNRs)** – sites of national importance, protected under UK legislation *(Wildlife and Countryside Act (1981).*
- **Sites of Interest for Nature Conservation (SINCs)** and **Local Nature Reserves (LNRs)** are of importance at the regional or local level, and are protected within planning policy guidance.

Priority Habitats and Species

2.5 A number of ***Priority Habitats and Species*** are listed as being of principle importance to wildlife conservation in Wales within *Section 7 of the Environment (Wales) Act (2016).* In general, projects which would cause adverse impacts to priority habitats or species would not be granted planning permission without appropriate mitigation.

2.6 The Section 7 lists of Priority Habitats and Species for Wales can be downloaded from https://www.biodiversitywales.org.uk/Environment-Wales-Act.

Protected Species

2.7 A range of ***legally protected species*** are included within different pieces of legislation, which offer varying forms of protection. Many protected species are also priority species, but also have specific legal protection from particular actions.

2.8 Commonly occurring examples of protected species include:

- **Bats** *(Conservation of Species and Habitats Regulations and Wildlife and Countryside Act(WACA), 1981, as amended*);
- **Dormice** *(Conservation of Species and Habitats Regulations & WACA*);
- **Otter** *(Conservation of Habitats and Species Regulations & WACA);*
- **Great crested newt** *(Conservation of Species and Habitats Regulations and WACA);*
- **Water Vole** *(Wildlife and Countryside Act, 1981 – Full protection)*
- **Marsh Fritillary Butterfly** *(Wildlife and Countryside Act, 1981 – Full Protection, Conservation of Species and Habitats Regulations 2017 – protection of core habit areas)*;
- **Reptiles**– slow worm, grass snake, common lizard and adder – (*Wildlife and Countryside Act, 1981 – Partial protection).* Rare and locally occurring species (Smooth snake, Sand Lizard) have additional protection under the *Conservation of Species and Habitats Regulations.*
- **Badgers** (*The Protection of Badgers Act, 1992*). Includes protection of badger setts from digging or disturbance;

- **Nesting Birds** (*Wildlife and Countryside Act, 1981)* Protected from disturbance when active, additional protection is given to certain rare or sensitive species listed in Section 1 of the Act).
- **Certain rare plants and invertebrates** are also protected within the *Wildlife and Countryside Act, (1981).*

2.9 This list is not exhaustive, and there are many more protected species which may occur within specific locations in the country and/or in particular habitats. Where relevant, any legislative constraints around other species are described within the report text.

Licensing

2.10 Any action which might breach the legislation in relation to protected species would risk causing a criminal offence (e.g. destroying a bat roost). In some cases it is possible to gain a licence from Natural Resources Wales (NRW) to permit otherwise unlawful actions.

2.11 There are two main forms of licence (in the context of development) – a ***survey licence*** held by individuals to permit certain survey techniques for protected species and a ***development*** or ***derogation licence*** for a particular project (e.g. a development) which might cause an offence – (e.g. to disturb a bat roost). Projects requiring development licences must meet certain criteria, and applications must contain a detailed method statement prepared by an ecologist to ensure that effective mitigation measures are delivered.

Invasive Species

2.12 A number of **invasive plant species** are listed within the Wildlife and Countryside Act (Schedule 9, part II), which includes the commonly occurring **Japanese Knotweed** and **Himalayan balsam,** as well as a number of other terrestrial and aquatic plants. In the context of development, these must not be caused to spread off site.

Planning Policy

2.13 Local planning policy is informed by National Planning Policy, which includes provision for protection of wildlife and biodiversity under Technical Advice Note (TAN) 5. This is implemented through the local development plan and supplementary planning guidance.

2.14 Specific policy guidance relating to biodiversity varies by local authority, and can be found within the appropriate Local Development Plan or Supplementary Planning Guidance.

2.15 In general, development projects with the potential to cause significant adverse ecological effects or to breach the legislation are required to submit sufficient information to ensure that such risks are assessed. This will be based on site surveys which describe the existing 'baseline' ecological conditions.

2.16 Where the risk of causing a legal offence or a significant adverse ecological effect has been identified, the project design must incorporate appropriate impact avoidance, mitigation or compensation measures, as required under UK legislation and planning policy.

2.17 Section 6 of the Environment (Wales) Act 2016 also places a ***'Biodiversity and Resilience of Ecosystems Duty'*** on planning authorities to "maintain and enhance biodiversity" where it is within the proper exercise of their functions. In doing so, public authorities must also seek to "promote the resilience of ecosystems".

2.18 Therefore, it is generally a requirement that development proposals can demonstrate that there will be no net loss to biodiversity caused by the proposals, and that appropriate ecological enhancements are integrated into the project design.

3 Methodology

Survey Scope

3.1 The survey site comprised the land affected by the proposed new quarry and immediately adjacent areas, as shown in the Phase 1 Habitat Map provided in Appendix A.

3.2 The appraisal included consideration of all those designated sites, priority habitats, protected species and priority species which occur, or potentially occur, within the *zone of influence* of the project.

3.3 In addition, habitats and species which have ecological value at the scale of the *site* or *district* were considered where relevant (for instance, in relation to the conservation of biodiversity at the site and the development of ecological enhancement strategies).

3.4 The *zone of influence* for the project was considered to comprise the site area, but also included consideration of potential ecological effects to adjacent habitats or sites, functionally connected habitats (e.g. those linked by watercourses or hydrology), or to mobile species occurring in the wider area.

Desk Study Methods

3.5 Aerial photographs (Google Earth Pro) and Ordnance Survey maps were used to gain an overview of the study area and surrounding habitats.

3.6 A data search from West Wales Biodiversity Records Centre was ordered, which comprised a search for records of protected and priority species and priority habitats within 2km of the site.

3.7 Details of statutory designated sites within 2km of the site were obtained using the Multi-Agency Geographic Information Centre (MAGIC) Interactive Map.

Field Survey Methods

Extended Phase 1 Habitat Survey

3.8 On the 6th October 2022, an Extended Phase 1 Habitat Survey was conducted at the site by Richard Gould.

3.9 The distribution of habitats and features within the survey area was recorded based upon the JNCC Handbook for Phase 1 Habitat Survey (2010).

3.10 Habitat classification was described using a Minimum Mapping Unit (MMU)[1] of 25m^2. Where relevant, notable features were target noted.

3.11 The site and wider area was assessed for its potential to support any protected or priority species of flora or fauna, as well as any invasive species. This included:

- *Bats* – an assessment of the presence and value of potential roost features (including a ground level preliminary roost assessment of the hedgerow trees) and an assessment of the value of habitats for foraging and commuting;
- *Dormice* – an assessment of the value of features on site and adjacent habitats to dormice;
- *Water vole and otter* – the river was walked and searched for evidence of either of these species, as well as areas of suitable habitat;
- *Badger* – a search for signs of presence including holes, trails, feeding remains and latrines. Identification of the presence of any setts and characterisation of the use of setts where applicable;
- *Reptiles* – assessment of the value of habitats and features to reptiles within the zone of influence of the project;
- *Amphibians* – assessment of the value of habitats on site and in the surrounding area to amphibians. Risk assessment of the potential presence of great crested newt based upon known geographical distribution, existing records habitat on site and presence of nearby ponds;
- *Birds* – identification of any habitat of potential value to nesting birds. Assessment of the risk of disturbance to any Schedule 1 bird species likely to occur on site or in the wider area;
- *Invertebrates* – assessment of the value of habitats on site to invertebrates) based upon geographical distribution, field identification (where applicable) and existing records;
- *Protected or priority plants* – positive identification or risk assessment of occurrence based upon habitats field recording and existing records;
- *Invasive Species* – Identification of the presence of Schedule 9 and other invasive species on site or in the immediate vicinity.

Value criteria

3.12 In order to inform the significance of any ecological impact, ecological features within the survey area were valued according to their importance on a geographic scale. Determination of value was based on a range of criteria, discussed within CIEEM (2018) '*Guidelines for Ecological Impact Assessment in the United Kingdom*'. The following

[1] **Minimum Mapping Unit (MMU)** is a term used to define the smallest area of a particular habitat type that will be mapped as such. Therefore, the dominant vegetation type within the MMU will be classified and marked on the map, and any smaller scale variations in habitat less than the MMU will not be shown. A higher MMU (e.g. 400m^2) will allow larger areas of land to be mapped more quickly and clearly, whereas a lower MMU (e.g. 25m^2) will provide detail showing smaller-scale changes in habitat type. Notable features or points of interest smaller than the MMU may be target noted where relevant.

paragraphs describe the terminology used for valuation, with an indicative guide to their application:

- *Negligible* – Negligible ecological value at any scale – e.g. areas of hardstanding, bare ground, road surfaces etc;
- *Site/ Zone of influence only* – Features which contribute to the biodiversity of the site or immediate surrounding area – e.g. habitats supporting commonly occurring or non-priority species;
- *'District / Local'* – Habitats and species of importance to the district, but not the County or Region. May include local wildlife sites or habitats containing non-priority species assemblages which are distinctive or notable at the local level;
- *'Regional'* – Habitats and species of importance at the county or the regional level, which may include features listed on Local Biodiversity Action Plans and Section 7 lists, as well as SINCs and County Wildlife Sites;
- *National* – Habitats and species of national importance – this may include SSSIs and National Nature Reserves, as well as sites of importance to priority or protected species or species assemblages;
- *International* – Sites containing habitats or species of international importance, including those covered by international legislation, such as Special Areas of Conservation or Special Protected Areas, Biosphere Reserves or Marine Protected Areas, as well as sites supporting populations of priority species of international importance.

3.13 Determination of value was then used to assess the likely significance of any ecological effects which may be caused by the proposed works. Assessment of significance is broadly based upon the *sensitivity* of the resource affected and the *magnitude* of the impact.

3.14 Where project actions have potential to cause *significant* effects, further survey work or impact avoidance or mitigation strategies are required. It should be noted that within a Preliminary Ecological Appraisal (PEA), it may only be possible to provide an indicative assessment of likely value until further work has been conducted.

4 Results – Baseline Conditions

Site Overview and Setting

4.1 The site was part of an agricultural grassland field immediately south of the existing Rushacre quarry.

4.2 Habitats in the surrounding area predominantly comprised agricultural grassland with hedges. A small area of broadleaved woodland (Rushacre Plantation) occurred immediately to the north of the existing quarry.

4.3 Residential and commercial development associated with the town of Narberth occurred to the south and east.

Figure 2: Overhead plan showing the site in relation to surrounding habitats

Designated sites

4.4 The following table summarises the statutory designated sites occurring within 2km of the proposed development, including *Special Areas of Conservation (SACs), Special Protection Areas (SPAs*), *Ramsar sites (Wetland sites of International Importance)* and *Sites of Special Scientific Interest (SSSIs)*. Sites designated for wide-ranging species (i.e. bats and birds) within 10km are also included where relevant.

Table 1: Designated Sites

Name of Designated Site	Distance from Development Site	Reason for designation
Eastern Cleddau River SSSI	1.5km SW and 1.75km NW from the site	Populations of otter, fish species and habitats. Feeding corridor and resting site for an assemblage of bat species including greater and lesser horseshoe and pipistrelle bats.

Cleddau Rivers SAC	1.5km SW and 1.75km NW from the site	Bullhead, River Lamprey, Brook Lamprey, Otter, Sea Lamprey. Rivers with floating vegetation often dominated by water crowfoot, Active raised bogs, Alder woodlands on floodplains
Slebech Stable Yard Loft, Cellars and Tunnels SSSI	7.7km SE	The loft is one of two known breeding sites for the greater horseshoe bat in Wales. The adjacent tunnels and cellars provide an important hibernation roost from October to April each year. Lesser horseshoe, Natterer's, Common pipistrelle, whiskered and brown long-eared bats have also been recorded.
Pembrokeshire Bat Sites and Bosherston Lakes SAC	7.7km SE	The Slebech Stable Yard, Loft, Cellars and Tunnels SSSI forms part of this SAC, which is designated for the greater horseshoe bat (contains 9.5% of the UK population, and a mixture of maternity, transitory and hibernation sites), as well as the lesser horseshoe bat and otter.

4.5 Two tributaries of the Eastern Cleddau River (part of the SSSI and SAC) occurred within the search area: 1.5km to the south and 1.7km to the north. These watercourses flow east to join the main Eastern Cleddau River. The Eastern Cleddau River SAC is of international importance for its habitats, fish and otter populations.

4.6 A small watercourse flows east – west approximately 150m north of the existing quarry (separated by a small woodland), which connects with the Eastern Cleddau SSSI to the south-west. The northern watercourse is not connected to the site, being separated by the intervening land-form and the A40.

4.7 The Slebech Stable Yard, Loft, Cellars and Tunnels SSSI is a roost site of international importance for greater horseshoe bats, which is separated from the site by a distance of 7.7km.

Habitats

4.8 The following paragraphs describe the habitats and features within the survey area. A Phase 1 Habitat Map is provided within Appendix A. Photographs are provided within Appendix B.

4.9 Flora and fauna are generally referred to by their common names within the text. Scientific names are shown in the species list provided in Appendix C. Species abundance (for each habitat type) was described using the DAFOR scale: *'Dominant', 'Abundant', 'Frequent', 'Occasional'* or *'Rare'*.

Improved Grassland

4.10 The main area of the site comprised actively managed improved grassland.

4.11 Plant species noted within the area included perennial rye grass *(dominant),* Yorkshire fog, white clover, creeping buttercup *(abundant),* broad-leaved dock and dandelion *(occasional).*

4.12 The improved grassland habitat was considered to have ecological value at the scale of the *site*.

Disturbed Ground (formerly improved grassland)

4.13 An area of improved grassland had recently been scraped of topsoil (which was piled on the edge of the site (Appendix A, Target Note 1), and was becoming colonized by a range of grassland and pioneering species including perennial rye grass, Yorkshire fog, greater plantain, cocksfoot, broad-leaved dock, creeping buttercup, white clover, daisy, sow thistle, broad-leaved willowherb, ragwort, burdock, knotgrass and redshank.

4.14 This habitat type was considered to have ecological value at the scale of the *site*.

Bramble Scrub

4.15 A small patch of dense bramble occurred adjacent to the hedgerow in the north-east corner of the site (Target Note 2), and an area of dense bramble occurred along the fence-line immediately to the west of the existing quarry (Target Note 6).

4.16 The bramble scrub patches were considered to have ecological value at the scale of the *site*.

Hedges

4.17 The borders of the field containing the site comprised intact native hedges.

4.18 Woody species within the hedges comprised hawthorn *(dominant),* blackthorn, elm, hazel, grey willow (*frequent),* wild cherry, ash, sycamore and dog rose *(occasional).* Bramble, bracken hogweed, bluebell, creeping thistle, black bryony, cleavers, stinging nettle, and red campion were noted on the hedgebanks.

4.19 The hedges were predominantly square-trimmed with few standard trees. However, a mature ash tree occurred in the south-west corner of the field (Target Note 4) and mature larch and holly trees occurred in the north-east corner (Target Note 3).

4.20 In addition, the margins surrounding the north-western section of the site comprised hedges with tree-lines of mature ash and pedunculate oak (Target Note 5).

4.21 The hedges and tree-lines were priority habitat features and were considered to have ecological value at the *Regional* scale.

Adjacent Habitats

4.22 Exposed rock and bare ground associated with the existing quarry occurred immediately to the north of the site. Due to regular disturbance caused by quarry workings, the habitats in this area were considered to have *negligible* ecological value.

4.23 A small block of semi-natural broadleaved woodland occurred immediately to the north-east of the site (ash dominant with frequent sycamore and hazel), of ecological value at the *district* scale.

4.24 Further improved grassland fields occurred to the east, south and west of the site.

Species Accounts

Bats

Existing Records

4.25 There were 38 records for bats within 2km of the site, which comprised common pipistrelle, soprano pipistrelle, noctule, myotis species (including Natterer's and whiskered), brown long-eared, greater horseshoe, lesser horseshoe and unidentified bat species.

4.26 The nearest records to the site comprised:

- A single common pipistrelle bat roost 800m from the site (2014);
- A common pipistrelle bat maternity roost 800m from the site (2002);
- A brown long-eared bat roost and myotis bat flight records 937m from the site (2019);
- A greater horseshoe bat flight record 1km from the site (2019).

4.27 In summary, there were no bat records within 800m of the site, but a number of species (including greater horseshoe and lesser horseshoe bats) have been recorded within the wider area.

Roost Features

4.28 There were no features with potential suitability for bat roosting within the area affected by the quarry extension. Mature trees on the western margin of the field and in the wider area could potentially contain cracks or cavities of potential value to roosting bats.

Foraging and commuting habitat

4.29 Hedges and tree-lines on the field margins are likely to have value to bats for foraging and commuting. The main area of the site had very limited value to bats.

Dormouse

Existing Records

4.30 There were no records for dormice within 2 km of the site.

Habitat Potential

4.31 Habitats affected by the proposed quarry extension had negligible value to dormice.

4.32 Hedges on the margins of the field contained a range of tree species of potential value to dormice, and were connected to small areas of woodland in the wider area. However, the extent of suitable habitat was relatively low, hedges were regularly managed and disturbed by livestock and there were no historical records in the vicinity. Overall, the likelihood of dormouse occurrence was considered likely to be low.

Otter and Water vole

Existing Records

4.33 There were 7 records for otter within the search area. The nearest records include a road casualty in 1997 (no precise grid reference provided) and a road casualty on the A40 680m from the site in 2013.

4.34 Otter have also been recorded in association with the Eastern Cleddau and its tributaries, over 1km of the site.

4.35 There were no records for water vole within the search area.

Habitat Potential and Field Sign

4.36 Habitats at the site had negligible value to otter or water vole, as there were no suitable watercourses in or adjacent to the land affected by the proposals.

Badger

Existing Records

4.37 There were 14 records for badger within 2km of the site. The nearest record was a live sighting on the A40, 516m NE of the site in 2011. All other records were over 1km from the site.

Habitat Suitability and Field Sign

4.38 No evidence of badger was noted during the site visit (such as setts, main trails, latrines, hairs or footprints).

Other Notable Mammals

Existing Records

4.39 There were 18 records for hedgehog (priority species) within the search area. The nearest record was 530m south of the site (2014).

4.40 A single record for harvest mouse (priority species) was returned adjacent to the A40, 980m from the site (2021).

4.41 There were 2 records for polecat (priority species) within the search area, with the nearest record 800m from the site (2005)

4.42 No other priority mammals (such as stoat, weasel or brown hare) have been recorded within the search area.

Habitat Potential and Field Sign

4.43 Indistinct mammal trails were noted in the grass around the site margins, which were attributed to fox (trials were narrow, faint and 'wavy' as opposed to the well-worn, straight trails characteristic of badger). Evidence of sheep crossing through the hedges in the southern margin was also seen.

4.44 The main area of the site had low value to priority mammals, but the hedges could be used by a range of mammals including priority species such as hedgehog, weasel and stoat as well as common species such as fox and rabbit.

Birds

Existing Records

4.45 There were 83 records of red-listed, priority or notable bird species within 2km of the site, which included bullfinch, house sparrow, song thrush, marsh tit, starling, red kite, skylark, dunnock, herring gull, fieldfare, spotted flycatcher, yellowhammer, willow tit, linnet, black headed gull, redwing, merlin, tree sparrow, lesser spotted woodpecker, barn owl, goshawk, wood warbler and kingfisher.

Habitat Potential and Observations

4.46 The managed, improved grassland habitat at the site had very limited suitability for nesting birds. However, if management were ceased, there would be potential for ground nesting birds such as meadow pipit to utilise the field.

4.47 Hedges and trees on the site margins are likely to be used for nesting by a range of bird species.

4.48 Bird species noted during the site visit included house sparrow (south-east corner of the field), meadow pipit (within the field), wren (southern hedge), wood pigeon and jackdaw (flying near to the site).

Reptiles

Existing Records

4.49 There were 3 records for slow worm, 2 records for grass snake and 1 record for common lizard within 2km of the site. Common adder were recorded just over 2km from the site.

4.50 The nearest records comprised a dead slow worm found within Narberth 800m from the site (2018) and a grass snake recorded 1.5km from the site (2021).

Habitat Potential

4.51 The actively managed improved grassland within the site was considered likely to have very low suitability for reptiles, and would probably only be used by wide-ranging species such as grass snake on an occasional basis at longer sward heights.

4.52 Cessation of active management within the grassland would potentially improve the suitability for reptiles over time.

4.53 Hedge-banks were located in a landscape dominated by improved grassland and were accessible to grazing animals. They would therefore have lower suitability for reptiles. However, the hedges could be used by animals for dispersal, and it would be potentially be possible for small populations of reptiles to occur in certain locations.

Amphibians

Existing Records

4.54 Common toad, common frog and palmate newt were recorded within the search area. The nearest record for all three species were 536m north of the site (1999).

Habitat Potential

4.55 The improved grassland within the site would have low value to amphibians, but small numbers of common species (such as common frog) could potentially occur – particularly at longer sward heights during the summer.

4.56 Hedges on the margins could also provide suitable habitat for common amphibian species.

4.57 Great crested newt have not been recorded within the locality and the risk of great crested newt presence within the site was considered to be *negligible*.

Invertebrates

Existing Records

4.58 There were 11 records for notable and priority insect species within 2km of the site, which included cinnabar moth, buff ermine, brindled beauty, white ermine, ghost moth and holly blue

4.59 None of these records occurred within 1km of the site.

Habitat Potential

4.60 The improved grassland at the site is likely to have low value to invertebrates.

4.61 Hedges on the margins contain a number of tree species (and a number of mature specimens) of higher value to invertebrates. These are likely to support a wide range of invertebrate species, potentially including some priority species.

Priority plant species

Existing Records

4.62 Native bluebell has been recorded 640m from the site, and probably occurs widely within hedges and woodland in the area.

Field Observations

4.63 Dead stems of bluebell were noted within hedges on the site margins (likely to be native bluebell). No priority plant species were noted within the grassland affected by the proposals.

Invasive plant species

Existing Records

4.64 There were 5 records of Himalayan balsam within the search area. The nearest record was just over 1km from the site (2017).

Field Observations

4.65 No non-native invasive plant species were noted within the area of site affected by the proposals.

4.66 A stand of *Montbretia crocosmia x crocosmiiflora* was recorded on the hedge-bank adjacent to the quarry access track (Target Note 7). The plant is a non-native invasive species, listed on Schedule 9 of the Wildlife and Countryside Act (1981, as amended).

4.67 *Montbretia crocosmia* is often found on road-side and verges. It typically spreads by underground runners (rhizomes) and can also be spread when underground parts (corms or rhizomes) are disturbed during management or excavation works.

Summary of Key Results

Designated Sites

4.68 The site was located 1.5km from the Eastern Cleddau SSSI. A small water-course which drains into the SSSI occurred approximately 150m to the north of the site (separated from the site by the existing quarry and small woodland).

4.69 The site was located within the range of horseshoe bats associated with the Slebech Stable Yard, Loft, Cellars and Tunnels SSSI, but habitats affected by the proposals are of lower value to horseshoe bats.

Habitats

4.70 The land affected by the proposals comprised improved grassland, disturbed ground and small, isolated areas of bramble scrub of ecological value at the *site* scale only.

4.71 Hedges on the field margins were priority habitats of ecological value at the *regional* scale.

Protected and Notable Species

4.72 The land affected by the proposals had very limited value to any protected or priority species. If left unmanaged, the grassland could potentially support nesting birds, grass snake (occasionally) and common amphibian species.

4.73 Hedges on the field margins had potential value to bats, dormice, nesting birds, reptiles and invertebrates.

4.74 No evidence of badger was noted.

Invasive Species

4.75 No non-native invasive species were noted within the land affected by the proposals, but a stand of *Montbretia crocosmia* was noted adjacent to the quarry access track.

5 Survey Limitations

General

5.1 The assessment was a based on an Extended Phase 1 Habitat Survey. This survey method provides an assessment of the broad habitat types in the area, along with an appraisal of the habitat suitability, and presence of field signs, for protected or notable species.

5.2 Various species of flora and fauna may only be apparent at certain times of year and, in some cases, may not be apparent every year. Zero observation of a species during a single site visit cannot therefore confirm absence. The Extended Phase 1 Habitat

survey can only provide an indication of habitat suitability for the species assessed, and to inform further survey requirements.

5.3 The information provided during an ecological surveys can become out of date as habitat conditions change over time. Typically, a preliminary ecological appraisal report is considered valid for 2 years, but in some cases update checks may be required sooner (for instance pre-construction checks for badger setts).

Season / Habitat Condition

5.4 The survey visit was conducted in on 6th October 2022. This was late in the season, but was considered suitable to classify the habitats present and identify the majority of plant species. However, early flowering species may not have been detected.

Data Search

5.5 Data from the local Biological Records Centre provides evidence of historical records within the search area. Absence of records in an area does not necessarily indicate absence of a species, but could reflect a paucity of recording effort.

Invasive species

5.6 Invasive species such as Japanese knotweed and Himalayan balsam are usually likely to be detected during a walkover survey at any time of year, if present. However, under some circumstances these plants may not be detected.

5.7 In some cases, Japanese knotweed rhizomes may extend underground for up to 7m from the visible part of a plant, and may remain undetected beneath the soil until triggered to grow in areas where it has previously not done so through changes to management practices (e.g. cutting/spraying). In addition, cutting and removal of plants could mask detection where they are still viable within the soil

5.8 Himalayan balsam spread from seeds which germinate in the early spring. Seeds can be flung several metres from plants and may remain dormant in the soil. The plant can rapidly colonise new areas under favourable conditions, particularly where management practices open up ground to new light (e.g. scrub clearance or tree removal).

6 Ecological Appraisal

6.1 This section contains an appraisal of the potential ecological impacts which may be caused by the project, both during the construction phase and during operation (medium - long term).

Overview of Key Project Actions

6.2 The project proposals are for the extension of the existing quarry into the adjacent field, which will take place over a period of time, with no distinct 'construction phase'.

6.3 The project would result in the permanent loss of an area of approximately 1.25ha improved grassland (as well as the underlying soil and rock).

6.4 Hedges and trees on the field margins would be retained.

Impacts to Designated Sites

6.5 Pollution of the water-course to the north of the site could result in adverse impacts to the Eastern Cleddau SSSI. Pollution could be caused by the washing of soil into the stream, or by the spillage of fuels or other liquids.

6.6 Pollution risks could be avoided or minimized by ensuring that appropriate controls are in place during excavation works. As the existing quarry site lies between the proposed site and the water course, it was considered unlikely that there would be any additional risk of pollution caused by the proposed extension.

6.7 No direct disturbance to the Slebech Stable Yard, Loft, Cellars and Tunnels SSSI (part of the Pembrokeshire Bat Sites SAC) is anticipated due to the intervening distance. The proposals were considered likely to represent a *negligible* risk of significant adverse impacts to horseshoe bats associated with the SSSI and SAC.

Impacts to Habitats

6.8 The proposals would cause the permanent loss of approximately 1.25ha improved grassland habitats of ecological value at the *site* scale. This would represent a minor adverse impact in the long term.

6.9 If excavation works were to encroach on tree-root zones of the adjacent hedges and mature trees, this could cause damage to these *priority* habitat features, resulting in a potentially significant ecological impact *(regional scale* in the worst case).

Impacts to Species

Bats

Roosting

6.10 The proposals would not disturb any features of potential value to roosting bats. No adverse impacts to bat roosts are therefore anticipated.

Foraging and Commuting

6.11 Hedges and trees on the field margins have value to foraging and commuting bats. These shall be retained in the long term, and no significant impacts are anticipated.

Dormice

6.12 Hedges and trees on the site margins shall be retained, and the risk of adverse impacts to dormice (if present within hedges) is likely to be *negligible*.

Otter and Water vole

6.13 No habitats of potential value to otter or water vole shall be affected by the proposals, and the risk of adverse impacts to these species is likely to be *negligible*.

Badger

6.14 No evidence of badger were seen at the site or its vicinity and the project proposals were therefore considered to have a *very low* risk of disturbing badger setts.

6.15 As badger can construct new setts relatively rapidly, and excavation works in the vicinity of a badger sett would risk causing a legal offence, ongoing monitoring of the hedges for badger activity is recommended.

Priority Mammals

6.16 The risk of causing adverse impacts to hedgehog or other priority mammals is likely to be *negligible*.

Nesting Birds

6.17 Disturbance of bramble scrub, or other areas of dense, unmanaged vegetation would potentially risk disturbing nesting birds if conducted during the breeding season.

6.18 Disturbance of nesting birds could be avoided by working on potentially suitable features outside the bird breeding season, or by checking such habitats prior to working.

Reptiles and amphibians

6.19 The proposals would have a very low risk killing or injuring reptiles or amphibians. Risks could be minimised by ensuring that habitats are managed to reduce their suitability for reptiles prior to disturbance or removal (i.e. by continued grazing and/or regular cutting of grassland).

Invertebrates

6.20 The proposals would not be likely to cause significant adverse impacts to invertebrate populations. Hedges and trees on the margins of the site (of potential value to invertebrates) will be retained.

Invasive Plants

6.21 The project proposals would have a negligible risk of causing non-native invasive plant species to spread off-site, provided the area of *Montbretia crocosmia* is not disturbed.

6.22 Appropriate controls must be implemented should it be necessary to disturb the soil in the vicinity of the plant for any reason (i.e. for the purposes of widening the track in this area).

7 Recommendations

Further Survey

7.1 No further survey work was considered necessary, as risks of adverse ecological impacts are relatively low and can be avoided through the implementation of the measures described below.

Mitigation

7.2 This section provides outline mitigation recommendations which address the ecological impacts described in Section 6.

Designated Sites

7.3 Working methods should include measures to ensure that soil, fuels or other materials are not at risk of being washed into nearby watercourses. Suitable measures could include designated areas for storage of materials and refueling away from watercourses and the use of silt traps/ bunds when excavating in wet conditions.

Habitats

7.4 The extent of excavations within the field shall be restricted so that hedges and trees on the site margins are protected from damage or disturbance. A buffer zone taking into account the tree-root protection areas of the boundary trees shall be demarcated on site.

Bats and dormice

7.5 Protection of the hedges and trees on the margins of the field from disturbance would ensure that habitats of potential value to bats and dormice are protected and retained in the long term.

Badger

7.6 It is recommended that an updated check for new badger setts within 30m of excavations shall be conducted by site personnel on an annual basis.

7.7 An ecologist shall be consulted on mitigation and licensing measures if any new holes are found.

Nesting Birds

7.8 Removal of bramble, dense vegetation or any areas of neglected, rough grassland shall be conducted outside of the bird nesting season in order to avoid disturbing nesting birds (i.e. not between mid February – end August).

7.9 If works must be conducted during the breeding season, any potentially suitable features shall be checked for nesting birds by an ecologist prior to working.

7.10 If any active nests are found, a suitable buffer zone around the nest shall be established, and the nest shall be protected until chicks have fledged.

Reptiles and Amphibians

7.11 Preferentially, grassland management by grazing and/or cutting shall be continued until excavation works are conducted (in order to minimise habitat suitability).

7.12 If the grassland is unmanaged for the period of over 1 year, a sequential cut of the vegetation from high to low shall be conducted prior to commencing any excavation works (refer to Appendix D for further details).

Invasive Plants

7.13 Should it be necessary to disturb any soil in the area affected by the *Montbretia crocosmia*, this shall be undertaken under a method statement to ensure that the plant is not transported off site (except by a licensed waste carrier).

Ecological Enhancement

7.14 In order to enhance the site and surrounding land for wildlife in the long term, the following measures could be integrated into the scheme:

- Retention of land between the boundaries of the quarry and adjacent hedges for natural regeneration would enhance the ecological value of the area over time;
- In addition, the area of field to the south of the quarry boundaries could be planted with a range of native/ wildlife friendly tree or shrub species;
- Bat boxes and/or bird nest boxes could be installed on boundary trees in undisturbed areas on the site margins;
- In the future, any areas of quarried land which are no longer active could be used for habitat creation through natural regeneration, planting of native species and the creation of features such as ponds, habitat piles and reptile hibernacula.

7.15 Further details if the proposed ecological enhancement measures are provided in Appendix E.

8 Conclusions

8.1 The land affected by the proposed new quarry comprised improved grassland of lower ecological value. Associated risks of adverse ecological impacts are low, and any adverse impacts could be avoided by implementation of the measures described in Section 7 of this report.

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Appendix A: Phase 1 Habitat Map

KEY

- Site Location
- I — Improved grassland
- Disturbed Ground
- Native Hedge
- Post and wire fence
- Target Note

TARGET NOTES

1) Soil Heap
2) Dense bramble
3) Mature larch and holly trees
4) Mature ash tree
5) Mature ash and oak trees in hedge
6) Dense bramble

Appendix B: Photographs

Image 1: Looking east along fence-line – improved grassland to right

Image 2: Site area – improved grassland

Image 3: Improved grassland – close view

Image 4: Disturbed ground and soil heap (Target Note 1)

Image 5: Eastern hedgerow

Image 6: Southern hedge

Image 7 – Western hedge

Image 8: Western hedge and mature Ash (Target Note 4)

Image 9: Hedge with trees (Target Note 5)

Image 10: Dense bramble on fence-line (Target Note 6)

Image 11: Existing quarry site – looking south

Image 12: Montbretia crocosmia on bank (Target Note 7)

Appendix C: Plant Species Recorded and Frequency within each Habitat Type

NB. Frequency is recorded according to the 'DAFOR' Scale: - Dominant (D), Abundant (A), Frequent (F), Occasional (O), Rare (R). Where species occurrence is localized to one or more areas within the habitat type, but not widespread, the prefix (L) is used, for instance LA = locally abundant.

Common Name	Species	Abundance by habitat type (DAFOR Scale)		
		Improved grassland	*Disturbed ground*	*Hedges*
Bramble	*Rubus fruticosa*			F
Ash	*Fraxinus excelsior*			O
Black bryony	*Tamus communis*			O
Blackthorn	*Prunus spinosa*			F
Bluebell	*Hyacynthoides*			F
Bracken	*Pteridium aquifolia*			F
Burdock	*Arctium lappa*		O	
Buttercup (Creeping)	*Ranunculus repens*	A	O	
Cleavers	*Galim aparine*			F
Cocksfoot	*Dactylys glomerata*		O	
Creeping thistle	*Cirsium arvense*			F
Dandelion	*Taraxacum officinale*	O		
Dock (Broad leaved)	*Rumex obtusifolius*	O	O	
Dog rose	*Rosa canina*			O
Elm	*Ulnus spp*			F
Greater plantain	*Plantago major*		O	
Hawthorn	*Crataegus monogyna*			D
Hazel	*Corylus avellana*			F
Hogweed	*Heracleum sphondylium*			F
Holly	*Ilex aquifolium*			R
Ivy	*Hedera helix*			
Knotgrass	*Polygonum aviculare*		O	
Larch	*Larix decidua*			R
Nettle	*Urtica dioica*			F
Perennial rye grass	*Lolium perenne*	D	O	
Pedunculate oak	*Quercus robur*			O
Ragwort	*Senecio jacobaea*		O	
Red campion	*Silene dioica*			F
Redshank	*Persicaria maculosa*		O	
Smooth sow thistle	*Sonchus oleraceous*		O	
Sycamore	*Acer pseudoplatanus*			O
Wild cherry	*Prunus avium*			O
Willowherb (Broadleaved)	*Epilobium montanum*		O	
Willow (Grey)	*Salix cinerea*			F
White clover	*Trifolium repens*	A	O	
Wood avens	*Geum urbanum*			
Yorkshire fog	*Holcus lanatus*	A	O	

Appendix D: Measure for the Protection of Wildlife to be Conducted prior to Excavation Works

The following measures shall be implemented prior to commencing excavation works:

- The site vicinity shall be checked for any new badger setts and nesting birds (during the breeding season) prior to working. If any are found, an ecologist shall be called for advice prior to proceeding.

- Prior to working, areas of long grassland and dense vegetation which have been left unmanaged for over one year shall be cut to ground level using a sequential cut in order to minimise its suitability for reptiles, amphibians or other fauna. The first cut shall be to around 15cm sward height. A second cut to 5cm sward height shall be made approximately 24 – 48 hours following the first cut. Each time, all arisings (cut vegetation) shall be removed from the site vicinity and piled in an undisturbed location.

Appendix E: Ecological Enhancement

Wildlife-Friendly Planting Recommendations

Larger Trees

- Pedunculate Oak *(Quercus robur)*
- Sweet chestnut *(Castanea sativa)*
- Willow species (*Salix spp.)*
- Birch *(Betula pendula, Betula pubescens)*
- Wild cherry *(Prunus avium*
- Beech *(Fagus sylvatica)*
- Hornbeam *(Carpinus betulus)*
- Small-leaved lime *(Tilia cordata)*

Small – Medium sized Tree and Shrubs

- Rowan *(Sorbus aucuparia)*
- Whitebeam *(Sorbus aria)*
- Hawthorn *(Crataegus monogyna)*
- Blackthorn *(Prunus spinosa)*
- Hazel *(Corylus avellana)*
- Dogwood (*Cornus sanguinea)*
- Field maple *(Acer campestre)*
- Guelder rose *(Vibernum opulus)*
- Wayfaring tree *(Viburnum lantana)*
- Spindle *(Euonymus europaea)*
- Elder *(Sambucus nigra)*,
- Crab apple / apple *(Malus spp.)*
- Pear *(Pyrus spp.)*
- Buckthorn *(Rhamnus cathartica)*
- Juneberry *(Amelanchier Canadensis/laevis)*
- Wild Service Tree *(Sorbus torminalis)*
- Plum / Damson *(Prunus spp,)*

Climbers

- Dog rose *(Rosa canina)*
- Field rose *(Rosa arvensis)*
- Wild honeysuckle *(Lonicera periclymenum)*
- Wild clematis *(Clematis vitalba)*

Bat Boxes

Bat boxes should be installed on trees near to ponds and tree-lines. They should be sites as high as possible (and at least 3m from the ground), with a flight approach free from vegetation. It can be beneficial to install bat boxes in clusters on different sides of the trunk of a tree to provide a range of different temperature conditions.

Bat boxes should be secured so that they do not swing in the wind.

There are a range of bat box models suitable for installation in trees, which include long-lasting 'woodcrete' boxes such as the Schwegler 2F General Purpose Box, the Harlech Woodstone Bat Box and the Miramere Woodstone Bat Box.



Bird Nest Boxes

Bird nest boxes should be installed on trees in undisturbed sheltered locations near to hedges or other vegetation, and out of the reach of cats or other predators.

Bird boxes should be secured so that they do not swing in the wind.



Habitat Piles

Habitat piles can be created using logs, brushwood, stone, or a mixture of these. Addition of dead leaves can improved the feature for hedgehog.

Log Pile

Brush Pile

Habitat piles should ideally be created adjacent to other habitat features such as hedgerows, dense shrubs or unmanaged, long vegetation

Artificial Hibernacula

'Artificial hibernacula' are raised mounds constructed of stone, inert rubble, logs and woody vegetation, with a layer of soil and turf on the top and sides.

Holes and gaps should be provided in the lower margins to facilitate access.

The crevices inside the mound provide hibernation and refuge sites for reptiles. The banks may also be used for basking.

The key design features (Edgar et al, 2010):

- Sunny position,
- Well-drained site, not prone to flooding,
- Orientation so that one of the long banks faces south,
- Access to reptiles through openings of some sort,
- Location in a patch of habitat favourable for dispersal, such as tussocky grassland,
- Minimal public disturbance,
- Size at least 4 m long, by 2 m wide by 0.8m high, and ideally much larger.

Depending on soil conditions and hydrology, it is often preferable to dig a pit, and then place the materials partially buried inside, rather than just creating a mound on the surface. Materials to help drainage, such as slotted pipes and gravel, can be placed in the structure. However, on impermeable soils or in low-lying areas it may be safer to create an entirely above-ground structure, to reduce the risk of winter flooding.

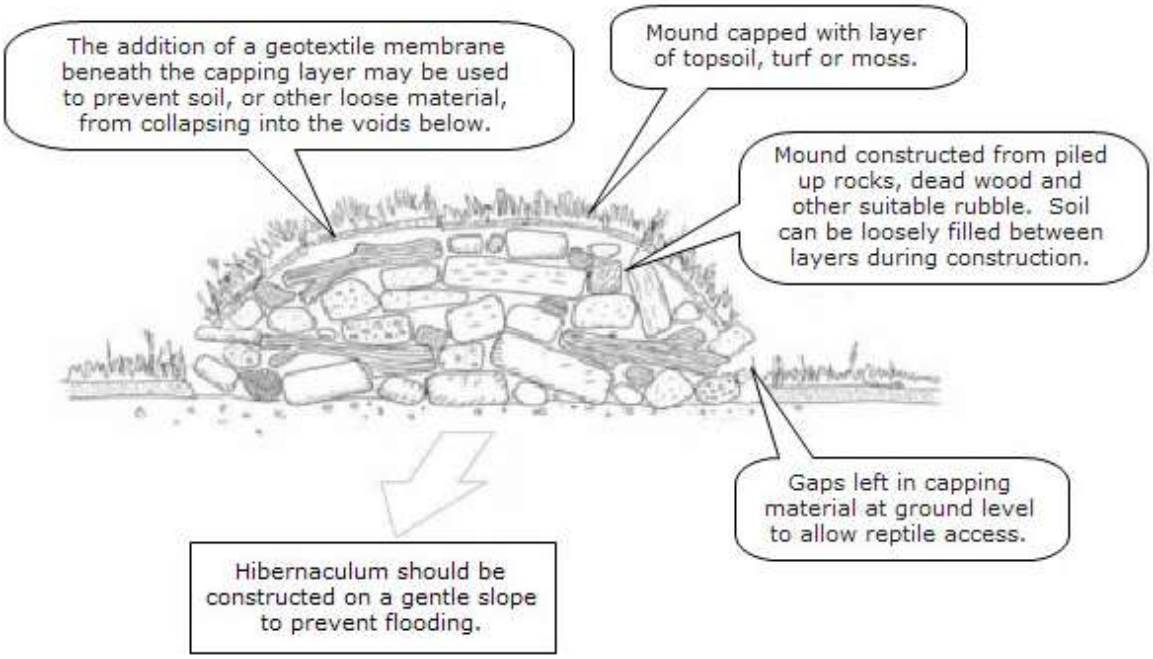

Image of an Artificial Hibernaculum under Construction (Lee Brady, in Edgar, Foster and Baker 2010)