Technical Appendix 2B: Ecological Design Strategy

Penpergwm Solar Farm

24/06/2021

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STATEMENT OF PURPOSE

This draft Ecological Design Strategy is being published to accompany pre-application consultation carried out under Articles 8 and 9 of the Development of National Significance (Procedure) (Wales) Order 2016. The formal pre-application consultation runs until 25th August 2021. This report is to be read in conjunction with the accompanying reports and plans:

- *Volume 2: Planning Application Drawings*
- *Volume 3, Technical Appendix 1A: Landscape and Visual Appraisal*
- *Volume 3, Technical Appendix 1B: Green Infrastructure Strategy*
- *Volume 3, Technical Appendix 2B: Ecological Design Strategy ("EDS")*
- *Appendix 2.1: Bat survey report*
- *Appendix 2.2: Great crested newt ("GCN") survey report*
- *Appendix 2.3: Protected species survey summary and assessment*

EXECUTIVE SUMMARY

2.1. Objectives have been established to enhance and maintain the biodiversity of land 0.5km north of Penpergwm and c. 3.9km southeast of Abergavenny, Monmouthshire, associated with a proposed solar farm and associated infrastructure (the "Proposed Development"). The objectives include planting of native trees and species-rich hedgerows to provide a plentiful source of food and shelter for a range of fauna species, developing a species-rich grassland across the site, and installing dormouse, bat and bird boxes, hedgehog houses, herptile hibernacula, invertebrate hotels and bee banks.

2.2. Actions have been formulated within this document to enable the objectives to be met and to maximise the Application Site's potential for supporting wildlife. Species which have been given priority within this management and enhancement plan include dormouse, common pipistrelle bat, hedgehog, house sparrow, bees and herptile species.

2.3. An Extended Phase 1 Habitat Survey was conducted in June 2020 in order to assess the ecological condition of the Application Site. As part of the full planning application, an Ecological Assessment (EcA) has been conducted to assess the Application Site's ability to support a range of wildlife both now and during all phases of the Proposed Development (See Technical Appendix 2 of Volume 2). The enhancements and mitigation measures set out in this document have been developed in accord with the findings of the extended phase 1 habitat survey.

2.4. Management recommendations have been made for new and existing habitats. Where possible, retaining features such as sections of grassland and maintaining the hedgerow boundary beyond the 40-year lifespan of the Proposed Development will be of benefit to wildlife. This will enable net biodiversity gain to be sustained in the long term.

INTRODUCTION

Background

2.5. Neo Environmental Ltd has been appointed by Great House Energy Centre Limited (the "Applicant") to produce an Ecological Design Strategy ("EDS") for a proposed solar farm and associated infrastructure (the "Proposed Development") on lands 0.5km north of Penpergwm and c. 3.9km southeast of Abergavenny, Monmouthshire (the "Application Site").

2.6. Please see **Figure 4 of Volume 2: Planning Application Drawings** for the layout of the Proposed Development.

Development Description

2.7. The Proposed Development consists of the construction of a 40MW solar farm and will comprise PV panels mounted on metal frames, inverter and transformer units, new access tracks, underground cabling, perimeter fencing with CCTV cameras and access gates, a temporary construction compound and all ancillary grid infrastructure and associated works.

Adopted Design Principles

2.8. Where possible, measures have been implemented as part of the iterative design process to prevent the various phases of the Proposed Development affecting sensitive ecological features. Ecological measures incorporated into the Proposed Development design include the following:

- A 5m buffer from hedgerows;
- 2m Buffer from Field Drains;
- Tree Root Protection Zones avoided;
- 10m Overhead Line (OHL) buffer;
- Flood Zone avoided; and
- 5m Public Right of Way (PRoW) buffer (10m in total).

Site Description

2.9. The Application Site is located on land 0.5km north of Penpergwm and c. 3.9km southeast of Abergavenny, Monmouthshire; the approximate centre point of which is Grid Reference E332954, N211435. Comprising 14 agricultural fields, the Application Site measures 70.03

hectares (ha) in total with only c. 17.61 hectares of the landscape under the solar arrays themselves. See **Figure 4 of Volume 2: Planning Application Drawings** for details.

2.10. Land within the Application Site itself is undulating, ranging between 61 – 140m Above Ordnance Datum (AOD) and consists of fields typically of medium scale, bound by a mixture of grassy field margins, semi-mature hedgerows, and intermittent trees (see **Figure 3 of Volume 2: Planning Application Drawings** for field numbers).

2.11. The Application Site is in an area with existing electricity infrastructure with a pylon line crossing Field 3 to the north and running in a north – south direction between Fields 6 and 7 and to the west of Field 8.

2.12. The local area is largely agricultural in nature, punctuated by individual properties and farmsteads; the nearest residential areas are the villages of Penpergwm and The Bryn; located 0.5km and 0.9km north respectively. and Yeomadon, located 0.7km northeast and southeast respectively. Recreational Routes include two Public Rights of Way (PRoW) which pass through Fields 8, 9, 10 and 11 in the southern section of the site and an Other Route with Public Access (ORPA) which passes from Great House along the eastern boundary of Field 14 and through the treeline on the southern border of Fields 5, 6 and 7. Another PRoW passes along the northern boundary of Fields 1, 3 and 4.

2.13. While there are a number of drains and watercourses throughout the Application Site, including a small tributary of the Frwd Brook bordering Field 11, the site is entirely contained within Flood Zone A, an area described as having a "*Low probability*" of flooding.

2.14. The Application Site will be accessed via an improved farm access situated on the southern boundary. Traffic will approach the site entrance from the south using a local road from Penpergwm for approximately 800m. Traffic will be routed to Penpergwm from the north via the B4598. This road connects to the strategic road network south of Abergavenny at the A40 / A465 interchange.

GUIDANCE

2.15. Biodiversity is declining across the UK; however, recent agri-environment schemes indicate that biodiversity can significantly increase through appropriate land management. Well-designed solar farm developments have the potential to support wildlife and increase biodiversity through appropriate management when located on agricultural land.

2.16. Due to the nature of solar farm developments, a large proportion of the site is accessible for plant growth and potential wildlife enhancements.

2.17. According to 'Biodiversity Guidance for Solar Developments'[1], each solar farm development in the UK requires a Biodiversity Management Plan ("BMP"), the purpose of which is to identify objectives for biodiversity and the means by which these objectives will be achieved. This can include the protection of existing species and habitats and the establishment of new habitats, as well as their maintenance and monitoring. Monmouthshire County Council has requested an equivalent Ecological Design Strategy ("EDS") in accordance with Local Development Plan[2] policies S13, GI1 and adopted Green Infrastructure Supplementary Planning Guidance.

2.18. The Council specify that the EDS should include the following:

Purpose and conservation objectives for the proposed works.

Review of site potential and constraints.

Detailed design(s) and/or working method(s) to achieve stated objectives.

Extent and location/area of proposed works on appropriate scale maps and plans.

Type and source of materials to be used where appropriate, e.g. native species of local provenance.

Timetable for implementation demonstrating that works are aligned with the proposed phasing of development.

Persons responsible for implementing the works.

Details of initial aftercare and long-term maintenance.

Details of monitoring and remedial measures.

Details of disposal of any wastes arising from works.

[1] BRE (2014) Biodiversity Guidance for Solar Developments. Eds G E Parker and L Greene

[2] Available at: https://www.monmouthshire.gov.uk/app/uploads/2017/05/Adopted-Local-Development-Plan-with-PDF-tags.pdf

2.19. Neo Environmental's EDS has been informed by the extended phase 1 habitat survey that was conducted in June 2020. It is also in accordance with LDP policies S13, GI1 and adopted Green Infrastructure Supplementary Planning Guidance.

OBJECTIVE OF THE ECOLOGICAL DESIGN STRATEGY

2.20. The objective of this EDS is to minimise any potential negative impacts arising from the Proposed Development, while increasing the habitat diversity. Through generation of renewable energy, the enhancement of the land within the development boundary will increase the site's capability of supporting wildlife.

2.21. This will be achieved by:

Retention and protection of existing habitats during construction;

Creating and maintaining a diverse species-rich grassland with a varied sward structure;

Creating and maintaining native tree planting and species-rich hedgerows;

Creating and maintaining wildlife shelters for Priority and locally important species;

Ensuring no net loss of biodiversity from the site as a result of the habitat creation scheme; and

Maximising the floral and faunal biodiversity of the created and retained habitats.

CURRENT POLICY

National Conservation & Biodiversity Management

The UK Post-2010 Biodiversity Framework

2.22. The UK Post-2010 Biodiversity Framework supersedes the former UK Biodiversity Action Plan ("BAP"). The Post-2010 Biodiversity Framework was developed in response to two main drivers, namely:

- The Convention on Biological Diversity's ("CBD's") Strategic Plan for Biodiversity 2011-20203 and its five strategic goals and 20 'Aichi Biodiversity Targets', published in October 2010[4], and
- The EU Biodiversity Strategy ("EUBS")[5].

2.23. The first Implementation Plan was produced for the Framework in November 2013, and an updated and revised Plan was produced in 2018. The Framework's aims include setting out:

"a shared vision and priorities for UK-scale activities, in a framework jointly owned by the four countries, and to which their own strategies will contribute."

2.24. This is based on goals such as reducing direct pressures on biodiversity and promoting sustainable use, improving the status of biodiversity by safeguarding ecosystems, species and genetic diversity, and enhancing the benefits to all from biodiversity and ecosystems. The current BMP aims to demonstrate how the Proposed Development will assist in achieving this target.

Wildlife & Countryside Act 1981 / Conservation of Habitats and Species Regulations 2017

- The Wildlife and Countryside Act 1981[6] (as amended), formerly used to implement EU legislation, has more recently been strengthened by the Conservation of Habitats and Species Regulations 2017. This consolidates and amends existing national legislation, making it an offence to:

  "Intentionally kill, injure or take any wild bird or their eggs or nests (with certain exceptions) and disturb any bird species listed under Schedule 1 to the Act, or its dependent young while it is nesting

[4] Available at: https://www.cbd.int/sp/

[5] Available at: https://ec.europa.eu/environment/nature/biodiversity/strategy_2020/index_en.htm

[6] Parliament of the United Kingdom, 1981. Wildlife and Countryside Act 1981 (as amended). Available at: http://www.legislation.gov.uk/ukpga/1981/69

Intentionally kill, injure or take any wild animal listed under Schedule 5 of the Act; intentionally damage, destroy or obstruct any place used for shelter or protection by any wild animal listed under Schedule 5 of the Act; disturb certain Schedule 5 animal species while they occupy a place used for shelter or protection

Pick or uproot any wild plant listed under Schedule 8 of the Act"

- Section 41 of the Conservation of Habitats and Species Regulations 2017 states that planning policies should encourage the management of features of the landscape which:

  "by virtue of their linear and continuous structure (such as rivers with their banks or the traditional systems of marking field boundaries) or their function as "stepping stones" (such as ponds or small woods), are essential for the migration, dispersal and genetic exchange of wild species."

Environment (Wales) Act 2016

2.25. This Act[7] places a duty on planning authorities to have due regard for biodiversity and nature conservation during operations, ensuring that biodiversity is a key consideration in the Welsh planning process. Section 6 of the act (Biodiversity and resilience of ecosystems duty) is particularly relevant in this connection.

2.26. Under Section 7 of the Environment (Wales) Act, the Welsh authorities have published lists of habitats and species of principal importance for the conservation of biodiversity in Wales.

The Action Plan for Pollinators in Wales

2.27. The Welsh Government published the Action Plan for Pollinators to address pollinator decline and protect pollination services.

2.28. The key activities identified for implementation of the Plan are as follows:

- Linking together and initiating policies and programmes to produce actions that are good for pollinators and therefore wider ecosystem health.
- Building an evidence base to support future action for pollinators
- Promoting, creating and enhancing diverse and connected flowering habitats across farmland
- Promoting, creating and enhancing diverse and connected flowering habitats across protected areas and the wider countryside

[7] Available at https://www.legislation.gov.uk/anaw/2016/3/contents

- Promoting opportunities and creating and enhancing diverse and connected flowering habitats in our towns, cities and developed areas
- Supporting UK action to promote healthy populations of pollinators in Wales

2.29. The enhancements set out within this EDS will create areas of flower-rich habitat and bee banks that will support Wales's pollinator species, including bees and flies.

Planning Policy

2.30. The following relevant planning policy has been outlined in **Technical Appendix 2: Ecological Assessment.**

- Planning Policy Wales 11 (2021)[8]
- Technical Advice Notes 5[9] and 6[10]

Biodiversity Action Plans

2.31. The UK Biodiversity Action Plan ("UKBAP"; 1994)[11] was organised to fulfil the Rio Convention on Biological Diversity in 1992, to which the UK is a signatory. Lists of national Priority species and habitats were produced with all listed species/habitats having specific action plans, defining the measures required to ensure their conservation.

2.32. While the UKBAP has since been superseded by the UK Post-2010 Biodiversity Framework (see above), regional and local BAPs ("RBAPs" and "LBAPs") have been produced and remain in place. The Monmouthshire LBAP[12] seems largely to have been superseded by the Council's Forward Plan[13], developed to help fulfil its duty under Section 6 of the Environment (Wales) Act. The Plan contains a long list of Priority habitats including, among others, lowland beech and yew woodland, hedgerows, arable field margins rivers and ponds.

2.33. Several Priority species are also listed. Those relevant to the habitats within and adjacent to the Application Site include brown hare, hedgehog, dormouse, common and soprano pipistrelle, greater horseshoe bat, otter, skylark, common cuckoo, corn bunting, yellowhammer, tree sparrow, grey partridge, dunnock, turtle dove, song thrush, great crested newt, common toad, common frog and cornflower.

[8] Available at: https://gov.wales/planning-policy-wales

[9] Available at: https://gov.wales/sites/default/files/publications/2018-09/tan5-nature-conservation.pdf

[10] Available at: https://gov.wales/sites/default/files/publications/2018-09/tan6-sustainable-rural-communities.pdf

[11] Available at https://data.jncc.gov.uk/data/cb0ef1c9-2325-4d17-9f87-a5c84fe400bd/UKBAP-BiodiversityActionPlan-1994.pdf

[12] Available at: https://www.monmouthshire.gov.uk/countryside-services/biodiversity/

[13] Monmouthshire County Council (2017) Biodiversity and Ecosystem Resilience Forward Plan: Environment (Wales) Act 2016. Available at: https://www.monlife.co.uk/wp-content/uploads/2019/12/Biodiversity-Ecosystem-resiliance-forward-plan-1.pdf

Local Conservation & Biodiversity

Monmouthshire Council Local Development Plan 2011 - 2021

2.34. Adopted in February 2014, this is the current Local Plan for Monmouthshire, the county in which the Application Site falls. The relevant policies set out within the Plan include the following ecological provisions.

Policy S13: Landscape, Green Infrastructure and the Natural Environment

- Policy S13 is a strategic, overarching policy concerning Broadly speaking, it requires developments to protect and enhance various assets including green infrastructure, ecological connectivity, sites of nature importance and other biodiversity features.

Policy SD1: Renewable Energy

- Policy D1 sets out criteria by which proposals for renewable energy schemes will be assessed. It states "*Renewable energy schemes will be permitted where:*

  (a) *There are no unacceptable adverse impacts on biodiversity […].*"

Policy SD4: Sustainable Drainage

- Policy SD4 notes that "*Development proposals will be expected to incorporate water management measures, including Sustainable Urban Drainage Systems (SUDS), to reduce surface water run-off and minimise its contribution to flood risk elsewhere*."

Policy GI1: Green Infrastructure

- Policy GI1 states the principles by which development proposals will be expected to maintain, protect and enhance Monmouthshire's diverse green infrastructure network.

Policy NE1: Nature Conservation and Development

- Policy NE1 notes *"…applications must be accompanied by an ecological survey and assessment of the likely impact of the proposal on the species /habitats, and, where necessary, shall make appropriate provision for their safeguarding.*

  Development proposals shall accord with nature conservation interests and will be expected to:
  i) Retain, and where appropriate enhance, existing semi-natural habitats, linear habitat features, other features of nature conservation interest and geological features and safeguard them during construction work;

  ii) Incorporate appropriate native vegetation in any landscaping or planting scheme, except where special requirements in terms of purpose or location may dictate otherwise;

iii) Ensure the protection and enhancement of wildlife and landscape resources by appropriate building design, site layouts, landscaping techniques and choice of plant species;

iv) Where appropriate, make provision for on-going maintenance of retained or created nature conservation interests.

Policy EP3: Lighting

2.35. This policy requires that development proposals are designed with an appropriate lighting scheme. Potential biodiversity impacts should be considered as part of this process.

BASELINE

Designated Sites

2.36. The Application Site does not lie within or directly adjacent to any statutory designated environmental sites. The desk-based assessment identified that within 15km of the Application Site boundary there are three internationally designated sites, all Special Areas of Conservation ("SACs"). The closest of these is the River Usk SAC, located 0.86km south-southwest of the Application Site. There are eight Sites of Special Scientific Interest ("SSSIs") within 5km of the Application Site.

2.37. The only designated sites with connectivity to the Application Site are the River Usk SAC, and the River Usk (Lower) and River Usk (Upper) SSSIs. With the implementation of the recommended measures, it has been concluded that there will be no significant adverse effects on any designated nature conservation site as a result of the Proposed Development.

Habitats

2.38. An extended phase 1 habitat survey was undertaken in June 2020. The survey covered all land within the site boundary at the time, plus a 50m buffer around this area. Due to later changes to the Application Site boundary, further phase 1 survey work was carried out in August 2020. At the time of the survey, access was only permitted within the landownership boundary. Parts of the adjacent land did fall within the ownership boundary, however, this has not significantly impacted the findings of the habitat or species scoping surveys.

2.39. This survey highlighted the presence of the following 14 habitat types within the Ecological Survey Area ("ESA"):

- A1.1.1 - Broadleaved Semi-Natural Woodland;
- A1.1.2 - Broadleaved Plantation Woodland;
- A2.1 - Scrub (Dense/Continuous);

- B4 - Improved Grassland;
- C3.1 - Tall Ruderal;
- G1 - Standing Water;
- G2 - Running Water;
- J1.1 - Cultivated/Disturbed Land – Arable;
- J2.1.1 - Intact Hedge – Native Species-rich;
- J2.3.1 - Hedge with Trees – Native Species-rich;
- J2.4 - Fence;
- J2.6 - Dry Ditch;
- J3.6 – Buildings, and
- J4 - Bare Ground.

Flora

2.40. The majority of the Application Site is dominated by agricultural grassland of low botanical interest. The extended phase 1 habitat survey did not identify any protected flora species.

Fauna

Otter

2.41. No evidence of otter was noted onsite during the survey. However, it is considered that occasional otter presence along the drain north of Fields 1, 3 and 4 is likely. The dense vegetation along the Application Site's northern boundary, along with some connected hedges, woodland and ditches means that there are suitable terrestrial habitats for otter to use.

Badger

2.42. No definitive evidence of badger was noted onsite, with no latrines, setts, hairs, distinctive scent or snuffling observed. The woodland and scrub within the ESA provide sett-building habitat for this species, while all the terrestrial semi-natural habitats within the Application Site offer foraging opportunities.

Dormouse

2.43. No signs of dormice were noted during the survey. The boundary hedgerows and woodland offer good resources for dormice, with a range of foodplants present to support this species year-round. There are some gappy areas of hedge, though these would be traversable for dormice. Moreover, there are alternative dormouse commuting routes around the local area, meaning that the gaps are not likely to be barriers.

Bats

2.44. The hedgerows, scrub, running and standing water within the Application Site and the woodland adjacent to the site provide foraging and/or commuting features for bats. These features are largely unlit, being screened from lighting associated with nearby houses, farm buildings or roads. The majority of the site is improved grassland and arable land, offering limited foraging interest.

2.45. There are a number of trees and structures around the site that offer good roosting suitability for bats. The adjacent Great House farm buildings offer excellent opportunities for bats to roost. Several of the older trees around the site have fissures, crevices and features suitable for woodland or crevice-dwelling species of bat to use.

Other Mammals

2.46. The Application Site offers suitable sheltering / foraging habitat for hedgehog in the form of hedgerows, woodland and dense scrub. Rabbit warrens were recorded in the south and east of the Application Site, and common small mammal species may also use the habitats within the site.

2.47. No signs of other protected or Priority mammals such as water vole were noted.

Herptiles

2.48. It is considered that Great Crested Newts (GCN) are likely to be absent from the Application Site. GCN surveys are detailed in **Appendix 2.2**. A Habitat Suitability Index (HSI) assessment of ten ponds was carried out. One pond was deemed to be of interest to GCN, and so Environmental DNA (eDNA) testing was carried out on this pond. The pond tested negative, signifying likely absence of GCN.

2.49. With regards to more common and widespread amphibians, suitable aquatic habitat within the ESA includes the small number of ponds and areas of slow-moving water within field drains. Hedges, marsh / grassland mosaics, scrub and woodland habitats present within the Application Site all offer suitable terrestrial habitat for amphibians.

2.50. The Application Site contains opportunities for reptiles, particularly at edges between longer and shorter grass swards. The grasslands with longer sward height offer opportunities for

foraging and refuge, whilst the more exposed bare and shorter-grazed areas offer insolation opportunities. The wooded areas and hedges also offer good opportunities for brumation/hibernation. The brash pile mentioned above may also offer refuge, though its newness and location within the shorter sward means it is only likely to be used opportunistically.

Birds

2.51. The ESA provides abundant suitable nesting habitat for a diverse assemblage of birds in the form of hedgerow trees and shrubs, scrub and woodland habitats. This assemblage is likely to include farmland birds of conservation concern. Buildings within and adjacent to the Application Site also offer suitable nesting opportunities for species such as swallow and barn owl.

Invertebrates

2.52. The vast majority of the site (improved grassland / arable) is considered to be of very limited value to invertebrates. Plant assemblages were relatively poor in diversity and/or ability to support invertebrates, whether due to the flora present or to management (grazing/cuts).

Other Species

2.53. No evidence of other protected or Priority species was found within the Application Site.

POTENTIAL IMPACTS

2.54. Potential impacts which could arise from the development of a solar farm include:

- Potential habitat loss and fragmentation,
- Disturbance during construction and decommissioning, and
- Potential contamination of surface waters.

Potential Habitat Loss and Fragmentation

2.55. The main impacts during the construction phase include the direct loss of habitat under the Proposed Development footprint, and indirect loss of habitat due to noise and vibration disturbance, and dust and water pollution. The loss of improved grassland and arable habitat areas is considered to be of negligible significance to nature conservation interest within the local area.

2.56. The Proposed Development has been designed in such a way to avoid significant losses of agricultural land during the operational stage, with a total ground level footprint of **3.19%.** Agriculture in the form of sheep grazing can continue on the remaining **96.81%** of the land.

2.57. The main habitat loss will occur under the Proposed Development footprint in regard to structures such as access tracks, cable trenches and hardstanding for buildings and inverters. Solar panels will be mounted on frames which will be pile driven into the ground in a similar way to fence posts, therefore limiting soil disturbance and the Application Site can be fully restored upon termination of its use as a solar farm.

2.58. A number of existing habitats will be enhanced, identified local species will be protected, and proposed habitat loss will be compensated for. New habitats will be created using native species appropriate to the Application Site, and biodiversity value will increase. It is therefore considered that the loss of habitat from the Proposed Development **will not be significant**.

Disturbance During Construction and Decommissioning

2.59. The construction and decommissioning phases of a development have the potential to impact upon local wildlife.

2.60. To minimise any potential disturbance to wildlife, several measures will be implemented prior to construction and decommissioning work taking place. Avoidance and mitigation measures recommended within the Ecological Impact Assessment (**Technical Appendix 2)** include:

- Pre-construction badger survey;
- Bat roost assessments for any bat roost potential ("BRP") trees to be removed;

- Pre-construction bird surveys, if works commence between March and August inclusive;
- Any vegetation removal from March to September to be carried out directionally towards retained habitat. Careful removal of hedgerow to be performed with hand tools and only when air temperature is above 10°C (ecologist to be contacted if herptiles are found);
- If vegetation removal needs to occur between October and February, dismantling/removal is to be overseen by a suitably qualified and experienced ECoW;
- Securely covering all excavations at the end of each working day to prevent accidental trapping of badger, otter, or other mammals; and
- Badger gates are proposed on security fences to permit the movement of wildlife across the local area.

2.61. During the operational phase, the disturbance to local wildlife will be more limited than the levels of disturbance the land is subject to from the current farming practice.

2.62. With the creation of new species-rich grassland, native hedgerows and trees, and the enhancement of existing hedgerows and sensitive management, the site's potential for supporting local wildlife is anticipated to be increased post-construction and result in a **net biodiversity gain.** There will also be a gain in ecosystem services, as outlined in **Technical Appendix 2: Ecological Assessment.**

Waste Management

2.63. There will be limited waste generated during the construction phase of the Proposed Development.

2.64. The contractor on site during each phase will ensure that all waste will be disposed of responsibly from the Proposed Development Site. Potential waste generated during the construction phase is likely to include:

- Wooden crates or cardboard boxes in which the materials will be packaged. These will be removed from the site and recycled appropriately at regular intervals.
- Packaging materials from various components including cabling, mounting frames screws, etc. These will also be removed regularly and recycled.
- Aggregate and substrate from groundworks – soil will be excavated for the construction of the access tracks, construction slabs, cable trenches, sub stations and inverter and transformer units. The ground disturbance for infrastructure is anticipated

to be 3.19% of the Application Site area. In the unlikely event that some excess soil cannot be re-used on-site, it will be minimal. It is recommended that any excess soil not re-used by recycled offsite at a licenced facility.

- As the Proposed Development involves a minor amount of groundworks, any topsoil and subsoil extracted will be kept separate on site to ensure contamination does not occur and to avoid damage to soil quality and structure. Any excavated soil which is not re-used or dispersed across the site shall be stored on an impermeable surface at the site compound and covered in order to prevent silt runoff and dust creation. Any spoil storage will be done in accordance with the development buffers specified, i.e., 2m from drains and ditches etc. Spoil heaps will be deposited as per standard spoil heap ratios.
- Site office waste will be collected separately in order to maximise the potential for recycling.
- Any kitchen waste will be taken off site in refuse containers and disposed of off-site.
- Oils/fuels, paints, solvents or other chemicals will be stored at the temporary site compound and disposed of appropriately.
- Burning of waste on site will be prohibited.

2.65. Further information can be found in Technical Appendix 8: Outline Construction Environmental Management Plan (OCEMP).

HABITAT CREATION

2.67. The existing arable groundcover will be replaced by a mix of tussocky grasses and wildflower species. Existing hedgerows will be enhanced, with new hedgerow and tree planting undertaken within the Application Site. These habitats will be in place and managed for the duration of the Proposed Development (circa 40 years).

2.68. Various options exist to enhance the biodiversity value of a solar farm site, including the creation of different habitats, such as hedgerows, field margins, wildflower meadows, nectar-rich areas and winter bird crops. Habitat creation planned as part of the Proposed Development is summarised in Table 4 below. Habitats that will be created include:

- Species-rich grassland;
- Native hedgerows;
- Native trees;
- Bat and bird boxes;
- Hibernacula;
- Invertebrate hotels; and
- Bee banks.

2.69. These habitats individually offer shelter and a food source for supporting a variety of wildlife. The mosaic of these new habitats, combined with the existing hedgerows and ditches, will support the existing wildlife within the Application Site. By offering a wider range of habitats that benefit local wildlife, they also have excellent potential to increase the biodiversity of the site.

2.70. The grassland, hedges and trees, invertebrate hotels and bee banks will not only support a wide variety of wildlife, but will also contribute towards the Action Plan for Pollinators in Wales by offering new habitats that will support important pollinator species such as bees and flies.

MANAGEMENT RECOMMENDATIONS

2.71. Management recommendations have been made below for new and existing habitats with the aim of achieving the following:

- to maintain and improve species biodiversity within the site;
- to enhance the quality of the habitats;
- increase the site's potential for supporting wildlife; and
- to avoid any potential negative impacts arising from the development of the site.

2.72. Recommended management actions required to achieve the desired site conditions are summarised in **Table 5** of this document. The table also provides a brief résumé of the rationale for, and possible constraints on, adopting the recommended management.

Responsibilities

2.73. It will be the responsibility of the Applicant to ensure that the proposed biodiversity management and monitoring is undertaken. It is expected that suitably qualified and experienced vegetation management contractors, arboriculturists and ecologists will be engaged by the Applicant for this purpose.

Grassland

2.74. The planting of species-rich grassland will occur within the Application Site over areas of current arable and improved grassland habitat that will be disturbed during the construction phase. This will primarily be beneath and between the solar PV panels, in all fields where these panels are present. The management regime will ensure a varied sward structure.

2.75. Among other wildlife, species-rich grassland is of benefit to invertebrate species. This will in turn encourage foraging by species such as bats and birds.

Soil Stabilisation and Sward Establishment

2.76. RE1 Traditional Hay Meadow Mix (available from a range of suppliers) or similar will be sown to provide a locally appropriate mixture of wildflowers and tussocky grasses, limiting erosion as well as increasing interest to pollinating invertebrates.

2.77. Species such as common couch, broad-leaved dock, stinging nettle and creeping thistle can be difficult to eradicate and may cause problems with sward establishment. These species should therefore be monitored when undertaking weed control on site. If required, they may need to be targeted by selective scything before they seed in late summer / autumn.

2.78. Low intensity sheep grazing will ensure that areas of shorter sward height will be managed and maintained. Due to selective grazing habits, sheep grazing can lead to a diverse sward structure, if stocked at correct numbers. Sheep-grazing the grassland areas after construction benefits local biodiversity by eliminating the requirement for pesticide use as part of the current management regime for crops in the arable field. It will also lead to an increase in the nesting suitability of fields for skylark[14],[15].

2.79. The proposed solar panels will achieve 0.8m ground clearance. This allows a large enough space for the smaller sheep within the flock to graze beneath the panels. The panels will be of a robust, piled construction that is able to withstand a sheep rubbing against the legs of the panel.

2.80. Sheep-grazed solar farms are present across the UK and Ireland. The Building Research Establishment ("BRE") released Agricultural Good Practice Guidance for Solar Farms in 2014[16].

2.81. In the event of any need to remove sheep grazing, mowing will be used to achieve a similar result. Panels will be situated in rows 2.5m apart. This will allow a sit-on mower, or indeed a tractor with an appropriate mowing attachment, to navigate the grassland around the array for mowing. If any small areas missed or unreachable, this would add heterogeneity to the habitat and would therefore be beneficial to the maintenance of a diverse sward.

Grazing Regime

2.82. Due to selective grazing habits, sheep grazing can lead to a diverse sward structure, if stocked at correct numbers. Sheep-grazing the grassland areas after construction will benefit local biodiversity by eliminating the requirement for pesticide use as part of the current management regime for crops in the arable field.

2.83. A grazier will be consulted to specify an appropriate welfare regime, though it is noted that the self-reliance of these breeds will limit the need for welfare checks. All checks that are needed will be performed on foot to minimise disturbance to wildlife. An appropriate stocking mix (in terms of age and sex) and density will be agreed with the Rare Breeds Survival Trust or a suitably experienced conservation grazier. Stocking density should fall between 0.2 and 0.5 livestock units per hectare per year, as advised by Plantlife[17], with stocking density at the low end of this range for the first three years.

2.84. From the fourth year onwards, grazing will occur between March and November inclusive. Removing grazing over winter will reduce the likelihood of soils becoming poached[18]. Sheep

[14] Fuller, R.J. (1996) BTO Research Report No. 164: Relationships Between Grazing and Birds With Particular Reference to Sheep in the British Uplands. British Trust for Ornithology, Thetford.

[15] RSPB (n.d.) Helping Bird Species: Skylark. Available at: https://www.rspb.org.uk/our-work/conservation/conservation-and-sustainability/farming/advice/helping-species/skylark/

[16] BRE (2014) Agricultural Good Practice Guidance for Solar Farms. Ed J Scurlock

[17] Rehabilitation of existing priority lowland grassland: Timescales to achieve favourable condition. Available at: http://www.magnificentmeadows.org.uk/assets/pdfs/Lowland_grassland_timescales_for_recovery_advisory_note_FINAL-Design.pdf

[18] Harris, P *et al.* (2014) Lowland Neutral Grassland: Creation and management in land regeneration.

will be contained by the security fencing in place during the operational phase, but will be allowed to roam freely inside these boundaries to encourage habitat diversity through a more naturalistic grazing process.

WILDFLOWER MEADOW

2.85. The wildflower meadow, as shown in **Figure 1.23 of Volume 3, Technical Appendix 1: Landscape and Visual Assessment**, is a species-rich grassland composed of wildflowers and fine grasses. This will create an insect-rich habitat and support a range of birds, mammals and invertebrates.

2.86. A wildflower mixture, comprised of the species set out in **Table 1** below, will be planted. The seed will be applied at a low-density rate of 25kg per ha, with a 20% wildflower and 80% grass mix. This will allow for some additional natural regeneration.

Table 1: Wildflower Mix Component

SCIENTIFIC NAME	ENGLISH NAME	PERCENTAGE MIX (%)
Lotus corniculatus	Bird's-foot trefoil	8
Centaurea nigra	Black knapweed	5
Medicago lupulina	Black medick	3
Vicia sativa	Common vetch	4
Galium verum	Lady's bedstraw	2
Lathyrus pratensis	Meadow vetchling	3
Ranunculus acris	Meadow buttercup	3
Malva moschata	Musk mallow	2
Leucanthemum vulgare	Ox-eye daisy	8
Silene dioicia/latifolia	Red/white campion	2
Trifolium repens	Red clover	10
Prunella vulgaris	Selfheal	5
Onobrychis viciifolia	Sainfoin	36
Achillea millefolium	Yarrow	6
Rhinanthus minor	Yellow rattle	3

Management from Years 1-3

2.87. The wildflower mix will be sown in September or March/April, following the completion of the construction phase.

2.88. Within the first year the main aim is to control weeds and to reduce competition from grasses. The sward will be kept short in the first year until the end of June to reduce competition and then allowed to grow in July and August to permit any wildflowers to seed. All cuttings should be removed from site several days after cutting to avoid smothering the sward, but allowing any seeds to disperse.

2.89. After the wildflower mix has established, this area should only require one cutting in late summer (August – September), allowing flowering species to seed, with an additional cut in October. Cuttings should be left on site for several days to disperse any seeds, then removed from site.

Hedgerows and Trees

2.90. This management plan will enhance the existing hedgerow boundaries by planting new stretches of species-rich hedgerow. Native trees will also be planted (see **Figure 1.23 of Volume 3, Technical Appendix 1: Landscape and Visual Assessment**) for additional ecological interest and to strengthen green infrastructure across the site and the nearby designated sites. The hedge and tree planting will include cherry trees (*Prunus padus* and *Prunus avium*) to provide autumn foraging for common birds and species such as badger that are known to use the Application Site.

2.91. Creating hedgerows will benefit a range of local species including terrestrial mammals, snakes and newts. If the correct species are planted and maintained correctly, a hedgerow's potential can be maximised, providing food and shelter throughout the year, as well as connecting existing green infrastructure and wildlife movement corridors.

2.92. A total of 10.6m of hedgerow (from a single specie-rich hedgerow with trees) is to be removed to create road access. Circa 58.1m of hedgerow will be realigned and a further 50.5m trimmed back to improve visibility along the road. Hedgerow sections lost will be replaced with new native species-rich hedges.

2.93. The hedgerows will be planted behind or through gaps in the site's exterior boundaries. Hedgerows will be planted as double staggered rows at 6-8 per metre, with a spacing of 300-400mm between rows. They will contain the species proposed in **Table 2**.

Table 2: Hedgerow Species Mix

SCIENTIFIC NAME	ENGLISH NAME	PERCENTAGE (%)
Crataegus monogyna	Common hawthorn	55
Corylus avellana	Hazel	10
Prunus padus	Bird cherry	5
Ilex aquifolium	Holly	5
Rosa canina	Dog rose	5
Viburnum opulus	Guelder rose	5
Prunus spinosa	Blackthorn	5
Ulex europaeus	Gorse	5
Lonicera periclymenum	Honeysuckle	5

2.94. It is also important to maintain ground flora along the hedgerows to provide suitable commuting corridors for small mammals and herptiles. This will be achieved by allowing

natural colonisation of ground flora from nearby hedgerows. These will be best suited to flourish in the shaded conditions created.

2.95. Native tree species will also be planted at field boundaries. They will contain the species proposed in Table 3.

Table 3: Proposed Tree Species

SCIENTIFIC NAME	ENGLISH NAME	PERCENTAGE (%)
Alnus glutinosa	Alder	25
Betula pubescens	Downy Birch	20
Salix caprea	Goat Willow	15
Salix pentandra	Bay Willow	25
Sorbus aucuparia	Rowan	10
Prunus avium	Wild Cherry	5

Management Regime

2.96. New hedgerows and trees will be planted within the first available planting season (November to March).

2.97. In year 2, newly planted hedgerow sections will be pruned (see **Figure 1.23 of Volume 3, Technical Appendix 1: Landscape and Visual Assessment** for further details). Existing hedgerows will be cut on a 2 or 3-year cycle, with no more than 1/3 cut in any one year. From year 5, new hedgerows will also enter this cycle.

2.98. Newly planted trees will be pruned as needed in years 2 and 3, and as necessary until established. They will then be left to continue their natural development for the remainder of the operational period. After decommissioning the land maintenance will be conducted by the landowner.

2.99. For all hedgerows and trees, any pruning or cutting should be done outside of the breeding bird season (which is March to August inclusive) to minimise disturbance to nesting birds. All hedgerow and tree management will be undertaken by a suitably qualified and experienced Arboricultural professional.

WILDLIFE SHELTERS

2.100. The creation of wildlife shelters, placed strategically throughout the Application Site, will provide shelter for a range of species.

Bird and Bat Boxes

2.101. Four bird nest boxes will be erected on mature trees throughout the Application Site. These will be a mixture of:

- 2x Schwegler 1B Nest Box with 26mm entrance for small species, and
- 2x Schwegler 1B Nest Box with 32mm entrance for larger species (including house sparrow and pied flycatcher – Priority species for Wales).

2.102. These will be positioned 2-4m up each tree with a clear flight path to each box entrance. The boxes will be slightly tilted forward so that any driving rain will hit the roof and bounce clear, and will face between north and west, thus avoiding strong sunlight and the harshest winds. Indicative locations are shown in **Figure 1.23 of Volume 3, Technical Appendix 1: Landscape and Visual Assessment)**; final locations will be decided during the installation process.

2.103. Four woodcrete bat boxes will be erected on retained mature trees. These will be a mixture of two each of Schwegler 1FD and 2F-DFP designs (suitable for Monmounthshire Priority species soprano pipistrelle (*Pipistrellus pygmaeus*)) or a similar mix if any of these are not available at the time of purchase. The boxes will be positioned 3-5m up the trees with a clear flight path to each box entrance. Boxes will face between southeast and southwest, thus providing natural heating. Indicative locations are shown in **Figure 1.23 of Volume 3, Technical Appendix 1: Landscape and Visual Assessment**; final locations will be decided during the installation process.

Maintenance Regime

2.104. All boxes will be maintained for a minimum of five years after installation. Boxes will be checked annually by a suitably competent and qualified ecologist. Where necessary, boxes will be cleaned by removing debris with a clean cloth. Any missing or damaged boxes will be replaced as needed. For boxes where bat roosting is discovered, subsequent checks should be carried out by a licensed bat worker.

Herptile Hibernacula

2.105. Two hibernacula will be constructed within the Application Site, close to other features of potential reptile interest, including ponds, scrub and tall ruderal.

2.106. Each hibernaculum comprises of log, rock and stone piles and is aimed at providing shelter for reptile and amphibians to hibernate. It may also be used by a variety of insects and small mammals. Hibernaculum creation will follow the instructions laid out within **Appendix 2.3A** below.

Management Regime

2.107. The hibernacula can be installed at any stage within the first year, and then left to allow natural vegetation colonisation to continue over the subsequent years.

Invertebrate Hotels

2.108. Two invertebrate hotels will be erected close to the Application Site margins to provide nesting and sheltering habitat for invertebrates including pollinator species.

2.109. For optimal warmth, the hotels will be erected in south- or southeast-facing areas not shaded by solar panels (see **Figure 1.23 of Volume 3, Technical Appendix 1: Landscape and Visual Assessment**).

Maintenance Regime

2.110. The invertebrate hotels will be checked once each summer for a minimum of five years after installation. Any missing or damaged hotels will be replaced within seven weeks (to allow for sourcing and deployment).

Bee Banks

2.111. Two bee banks will be created in south-facing locations across the Proposed Development. These will consist of mounds of loose sand and similar materials, set aside for mining bee species to burrow into. Bee banks should be located close to the wildflower meadow.

2.112. To create warm conditions, these will be constructed in areas not shaded by solar panels. Further details are provided in **Appendix 2.3B**.

Management Regime

2.113. The banks can be created at any stage within the first year, and then left to allow a cycle of vegetation colonisation and natural disturbance to continue over the subsequent years.

Table 4: Habitat Creation, Management and Maintenance

Objective	Action Plan Task	Timescale	Notes
Enhance the quality of habitats present	Create a diverse grassland with varied structure After the development of the solar farm, sections of species-rich grassland seed mix will be sown across the site.	Year 1	Most of the site will be sheep-grazed with a light stocking rate that will allow varied sward structure across the site. Species-rich grassland will support invertebrate species, providing prey to many Priority species.

Create a diversity of habitats within the site	New tree planting This will include alder *Alnus glutinosa*, downy birch (*Betula pubescens*), goat willow (*Salix caprea*), bay willow (*Salix pentandra*), rowan (*Sorbus aucuparia)* and wild cherry (*Prunus avium*).	Year 1	Planting will strengthen ecological connections
	Enhance existing hedgerow boundary Plant new hedgerows with hazel (*Corylus avellana*), blackthorn (*Prunus spinosa)*, hawthorn (*Crataegus monogyna*), bird cherry (*Prunus padus*), holly (*Ilex aquifolium),* dog rose (*Rosa canina*), gorse (*Ulex europaeus*), honeysuckle (*Lonicera periclymenum*) and guelder rose (*Viburnum opulus*). These corridors will allow the movement of small mammals and herptile species. To ensure a diverse hedgerow with a good structure it is important to maintain ground flora along the hedgerow.		A hedgerow provides shelter and a source of food for a variety of species including birds, small mammals, amphibians, reptiles and butterflies. If appropriate species are planted and maintained correctly, a hedgerow's potential can be maximised, providing food and shelter throughout the year.

	Install hibernacula		See **Appendix 2.3A** The hibernacula comprise of log, rock and stone piles, which are aimed at providing shelter for herptile species to hibernate. However, the hibernacula may also be used by a variety of insects and small mammals.
Ensure fencing does not inhibit the movement of wildlife	Security fencing to have badger gates	Year 1 (during construction phase)	To allow movement of badgers, brown hares, hedgehogs, small mammals and herptiles across the development allowing access for these species where required.
Create a diversity of habitats within the site	Create bat roosting habitat Native tree species will be planted, which, in time, will create new bat roosting resources.	Year 1	The creation of roosting habitat, along with the creation of species-rich habitat that will encourage an abundance of invertebrate life (a potential food source), will be beneficial to local bats.
	Create bird nesting habitat Native tree species will be planted, offering new nesting resources. Low intensity sheep grazing will increase nesting opportunities for skylark.		The creation of nesting habitat, along with the creation of species-rich habitat that will encourage an abundance of invertebrate life (a potential food source) and diverse grassland seed-fall, will be beneficial to local birds including specialist farmland birds.
	Create bee banks Earth banks will be created across the site to support bees and other invertebrates.		See **Appendix 2.3B** Banks will be left bare and south-facing for insects such as solitary bees

	Install invertebrate hotels	Year 1	Features aimed at raising invertebrate numbers and diversity will also benefit insectivorous predators such as bats, birds and herptiles.
Maintain tree planting	Tree pruning	Years 2 and 3 (longer if needed) between January and February	Management will ensure optimal availability of berry and blossom for wildlife throughout the year as a potential food source.
Maintain new species-rich ground flora around solar PV installation	Low intensity sheep grazing	Each year	Low intensity sheep grazing will ensure that the areas of shorter and longer swards will be managed and maintained. This will result in an overall increase in biodiversity within the site.
Maintain hedgerows	Cut section of hedgerow	Each year between January and February	Cutting on a rotational basis, following standard advice[19], to ensure the optimal availability of berry and blossom for wildlife throughout the year as a potential food source. Management will also ensure a good base is maintained within the hedgerow to provide suitable habitat for a range of wildlife.
Maintain new wildlife shelters	Check bird and bat boxes, hedgehog houses and invertebrate hotels	Summer of years 1 to 5+	Licensed bat worker required for future checks for all bat roosts discovered. Bird and bat boxes to be cleaned as necessary.

[19] Hedgelink UK, The Complete Hedge Good Management Guide, Available at www.hedgelink.org.uk

			All boxes that are missing or are damaged so as not to be functional will be replaced.

GENERAL CONSIDERATIONS

Obligations

2.114. During each of the development phases there are a number of legal obligations that should be considered by all those involved in site work:

- Ensure obligations of the Conservation of Habitats and Species Regulations 2017[20] are met by all involved with the site (see also **Technical Appendix 2: Ecological Assessment.**
- Ensure obligations of the Wildlife & Countryside Act 1981 (as amended)[21] are met by all involved with the site (see **Technical Appendix 2: Ecological Assessment** for further detail).
- Ensure all relevant Health & Safety at Work Act obligations[22] are met.

Good Ecological Practice

2.115. Whilst management practices should only be altered if there is a good ecological reason for doing so, they should not rigidly be adhered to if they are obviously detrimental to wildlife.

[20] Parliament of the United Kingdom, 2017. The Conservation of Habitats and Species Regulations 2017. Available at https://www.legislation.gov.uk/uksi/2017/1012/contents/made

[21] Parliament of the United Kingdom, 1981. Wildlife and Countryside Act 1981 (as amended). Available at http://www.legislation.gov.uk/ukpga/1981/69

[22] Parliament of the United Kingdom, 1974. Health and Safety at Work etc. Act 1974 (as amended). Available at https://www.legislation.gov.uk/ukpga/1974/37/contents

INDICATIVE MANAGEMENT SCHEDULE

2.116. **Table 5** below shows possible months in which activities will occur during habitat establishment and continued management.

Table 5: Timeframes for Management Activities

MANAGEMENT ACTIVITY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Year 1 – Initial Habitat Enhancement												
Hedgerow and tree planting	✓	✓								✓	✓	✓
Removal of existing vegetation and seeds beneath solar panels			✓	✓	✓							
Cultivate and allow soil to settle						✓	✓					
Grassland sowing beneath solar panels								✓	✓			
Years 2 and 3 - Annual Habitat Management												
Grazing of grassland beneath solar panels (once sward is established)								✓	✓	✓	✓	
Pruning of newly-planted hedgerow sections and trees	✓	✓							✓			

Checks by contractor through the initial maintenance period to comprise weed clearance, watering and pruning			✓	✓	✓	✓	✓	✓				
Replacement of any dead, dying or diseased newly planted trees or hedgerow										✓	✓	✓
Existing hedgerows cut on a 2- or 3-year cycle, with no more than 1/3 cut in any one year	✓	✓										
Ongoing Annual Management – Year 3 onwards												
Grazing of grassland beneath solar panels			✓	✓	✓	✓	✓	✓	✓	✓	✓	
Ongoing Annual Management – Year 4 onwards												
Light pruning of newly planted hedgerow sections	✓	✓							✓			
Existing hedgerows cut on a 2- or 3-year cycle. All hedgerows from	✓	✓										

year 5, with no more than 1/3 cut in any one year.												

DECOMMISSIONING

2.117. At the end of the operational period, decommissioning will take place. This will entail dismantling and removing all of the materials and equipment in order to reinstate the land back to its original condition. Where possible, retaining features such as species-rich grassland and maintaining the hedgerow boundary beyond the 40-year lifespan of the Proposed Development will be of benefit to wildlife. This will enable net biodiversity gain to be sustained in the long term.

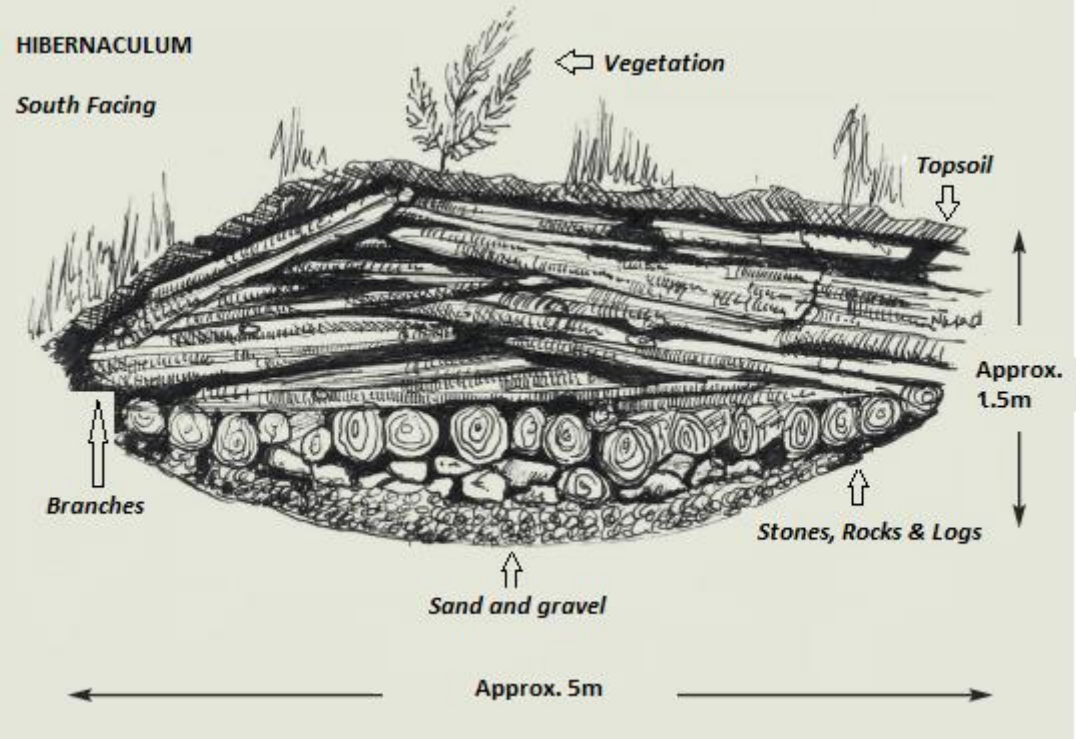
APPENDICES

Appendix 2.3A – Hibernaculum Construction

Appendix 2.3B – Bee Bank Construction

APPENDIX 2.3A - HIBERNACULUM CONSTRUCTION

2.118. The hibernaculum will follow the basic construction set out below, with the log and stone piles situated to the north of the hibernaculum.



- A 5m long east-west running ditch 1m deep and 1m wide will be dug.
- The base will be lined with sand and gravel.
- This will be followed with layers of stones, rocks and logs.
- Smaller branches will then be placed on top, and covered soil from the excavation will be placed over the pile, leaving gaps for access.
- The soil will be shaped into a mound.
- The north-facing side of the mound will be seeded / planted with species that will attract insects and will also provide extra shelter.
- The south-facing side will be maintained with a sparse vegetation cover to provide an area to bask.
- A log pile of approximately 2m by 1m will be placed to the north of the hibernaculum.

APPENDIX 2.3B – BEE BANK CREATION

- Material will be built into a crescent-shaped mound with various slopes, hollows and angles that may be utilised and favoured by different species.
- Aggregate and/or soil will be used to create the core of the bank. Locally sourced builders' sand will be used to cap the bank in a layer of >30cm deep. Bank faces will then be compacted with the back of a spade.
- Banks will be between 0.5m and 1.5m high. A variety of bank heights will be created to provide habitat microdiversity.
- Vertical faces created on bee banks take much longer to vegetate, and this makes them attractive to many species. Over time a bee bank will be vegetated over through succession.
- Planting appropriate vegetation in an open structure in front of a bee bank will provide extra habitat for invertebrates that are attracted to the bee bank.
- These banks will be created close to flower-rich areas that will create important foraging opportunities for pollinators.

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