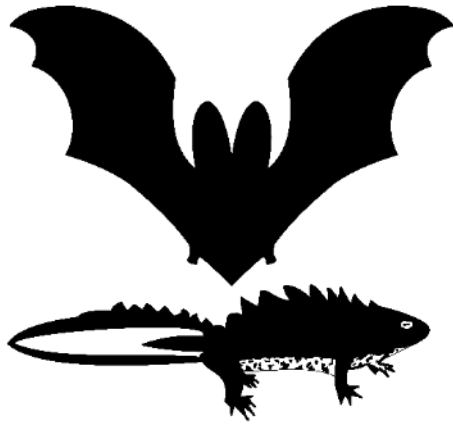




AEWC^{Ltd}

Animal Ecology & Wildlife Consultants

Biodiversity Net Gain Assessment

Furnace Lakes

**Guildford Road
Rudgwick
Horsham
RH13 0QZ**

Natalie Arscott

**24-104
May 2026**

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Report and version number	24-104-BNG-V2
Survey Date	06/09/2024

Summary

- AEWCLtd were commissioned by Batcheller Monkhouse on behalf of their client to undertake a Biodiversity Net Gain Assessment at Furnace Lakes, Guildford Road, Rudgwick, Horsham, RH13 0QZ at central grid reference TQ 10702 33486 to support a partly retrospective application for the site.
- The estimated baseline and post-development biodiversity value of the habitats on the site is calculated using the Defra Statutory Biodiversity Metric Calculation Tool.
- The proposal is a partly retrospective application for the siting of three shepherd's huts adjacent to a fishing lake, to be offered as holiday lets. The installation of two shepherd's huts and associated works have already been completed. This has involved clearance of modified grassland, with further clearance of this habitat in the north of the site proposed for the third shepherd's hut.
- Since works have begun on-site in 2024, the site's baseline condition has been taken from a combination of the findings of the September 2024 habitat survey and from historic satellite imagery.
- Ecological enhancements built into the development design include creation of a belt of mixed scrub between the path and the off-site woodland in the north of the site, enhancement of the modified grassland between the shepherd's huts area and the car park to other neutral grassland, planting of five new trees near the southern-most shepherd's hut, and planting of a firethorn (*Pyracantha*) hedgerow adjacent to the woodland. The hedgerow planting has already been carried out in 2024 simultaneously with installation of the two shepherd's huts, whilst the other enhancements remain to be completed. In terms of the BNG metric, these are sufficient to offset the loss of the baseline habitats on the site and satisfy trading rules.
- **The headline results indicate that there is an estimated net gain of 10.45% for habitat units.**
- **The hedge-line results show an estimated increase of 0.07 hedgerow units which corresponds to a 350% net gain.**
- A draft habitat creation, management, and monitoring plan is included in Section 7 of this report. This should be formalised prior to commencement.

This report has been prepared by AEWCLtd, with all reasonable skill, care and diligence within the terms of the Contract with the client. We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above. This report is confidential to the client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at their own risk.

The information and data which has been prepared and provided is true and has been prepared and provided in accordance with the 'Guidelines for Preliminary Ecological Appraisal' and 'Code of Professional Conduct' issued by the Chartered Institute of Ecology and Environmental Management (CIEEM). We confirm that the opinions expressed are our true and professional bona fide opinions.

1. Introduction

- 1.1 AEWCLtd were commissioned by Batcheller Monkhouse on behalf of their client to undertake a Biodiversity Net Gain Assessment at Furnace Lakes, Guildford Road, Rudgwick, Horsham, RH13 0QZ to support a partly retrospective application for the site.
- 1.2 The purpose of this report is to give an estimate of the BNG units that may be achieved under the current development proposals, where a BNG of +10% is not achieved suggestions for additional ecological enhancement are provided.

2. Background

- 2.1 AEWCLtd carried out a Preliminary Ecological Appraisal at the site in September 2024.
- 2.2 The proposed development site is located at Furnace Lakes, Guildford Road, Rudgwick, Horsham, RH13 0QZ at central grid reference TQ 10702 33486. The site is located in a rural area in Rudgwick, accessed from the A281 and 6.6km to the northwest of the centre of Horsham. The surrounding landscape comprises predominantly woodland, pasture, and arable land. See Figure 1.



FIGURE 1: SHOWING THE SITE LOCATION

- 2.3 The proposed development site is approximately 0.38ha and largely comprises a grassed clearing with scattered trees between a lake and woodland, a hardstanding car park, a surfaced path between the car park and clearing, and a long hardstanding access track to the road. See Figure 2.



FIGURE 2: AERIAL VIEW OF THE SITE SHOWING THE BOUNDARY

- 2.4 Works have already begun on the site with two shepherd's huts and associated decking, surfacing and landscaping created, and therefore the site's baseline condition has been taken from a combination of the findings of the September 2024 habitat survey and from historic satellite imagery - see the Preliminary Ecological Appraisal by AEWCLtd dated October 2024 for full details.
- 2.5 The area of grassland shown in the main development area for the baseline habitat map (Figures 4 and 5) is greater than at present, to represent the likely condition of the site immediately prior to clearance and installation of the shepherd's huts. It should be noted that much of this area was hard surfaced and in active use for a fishery business until 2021, with grassland subsequently encroaching from the site's state of disuse. Gravel can still be seen beneath much of the retained grassland and the habitat quality is poor. See Photos 1 and 2.



- 2.6 The proposal is a partly retrospective application for the siting of three shepherd's huts adjacent to a fishing lake, to be offered as holiday lets. See Figure 3.

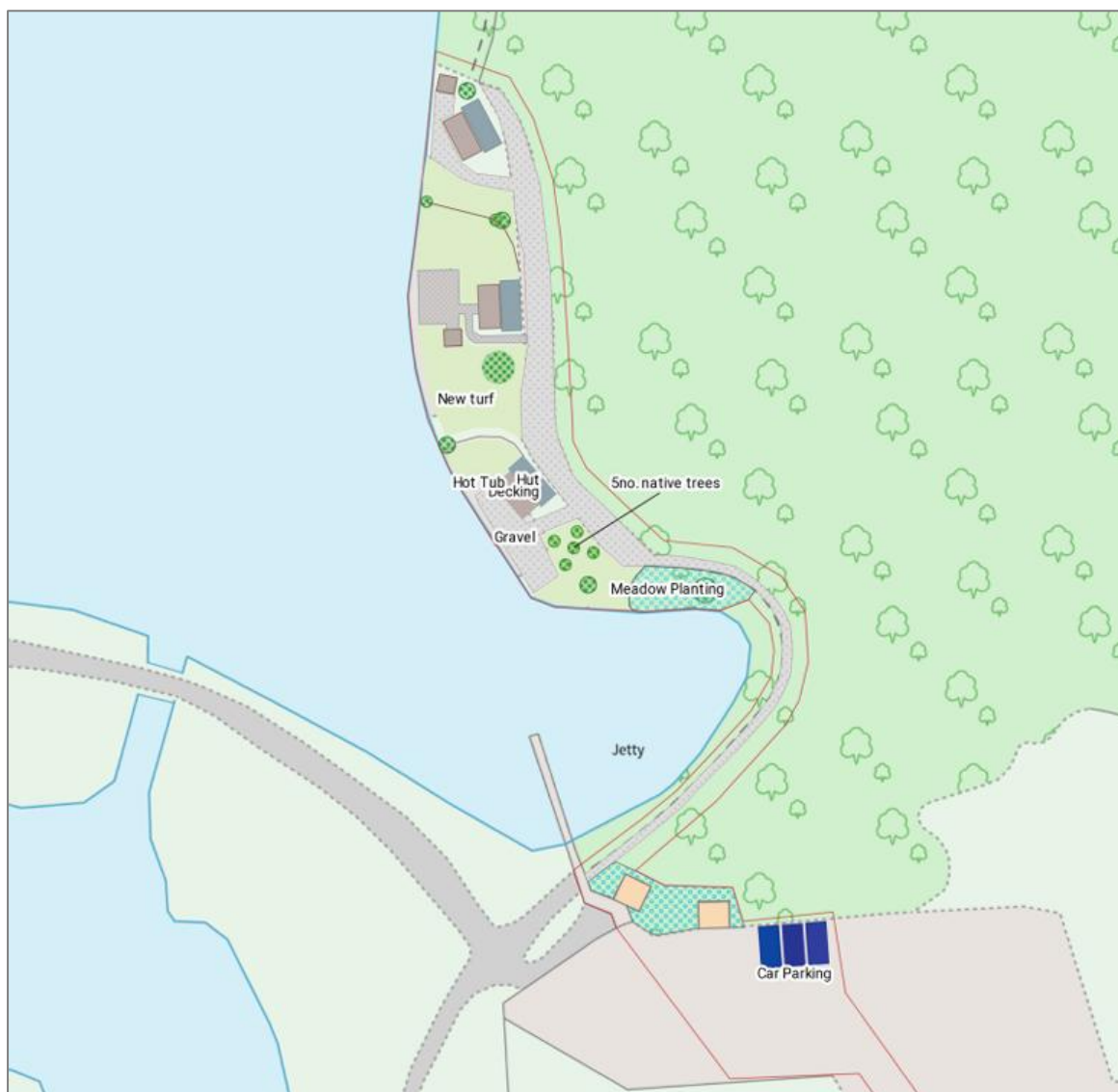


FIGURE 3: PROPOSED WORKS

3. Method and Constraints

- 3.1 The estimated baseline and post-development biodiversity value of the habitats on the site is calculated using the Defra Statutory Biodiversity Metric Calculation Tool. Habitat condition was assessed using the Statutory Biodiversity Metric – Technical Annex 1 Condition Assessment Sheets.
- 3.2 The following assumptions have been made and therefore associated constraints should be considered when looking at BNG unit values obtained:
- The potential for protected and notable species is not covered within the scope of this report;
 - Baseline habitats on-site are taken from both those identified within the survey undertaken in September 2024 and from historical satellite imagery between 2020 and 2024 for areas that have already been impacted by works;
 - Post-development habitats have been inferred from those given with the Proposed Site Layout as shown in Figure 3 and as discussed with the client;
 - All areas and lengths are approximate;
 - Areas in hectares and length in km are both given to four decimal places, therefore rounding errors and occasional adjustments to values, to ensure consistency of total areas in baseline and post-development habitat size, are unavoidable;
 - Habitat quality has been estimated in some instances (i.e. for post-development habitats);
 - Tree areas are calculated using the tree helper tool within the metric; and
 - The area of planted trees was estimated using small trees in the tree helper tool.
- 3.3 Given the above constraints the values for BNG obtained should be considered to be an **estimate** only.
- 3.4 Calculations may need to be adjusted in future should the BNG metrics or requirements be revised.

4. Habitat Data

- 4.1 The baseline and post-development habitats used for this assessment are illustrated in Figures 4 - 7.



FIGURE 4: BASELINE ON-SITE HABITATS (WHOLE SITE)



FIGURE 5: BASELINE ON-SITE HABITATS (ZOOMED FOR CLARITY)



FIGURE 6: POST-DEVELOPMENT ON-SITE HABITATS (WHOLE SITE)



FIGURE 7: POST-DEVELOPMENT ON-SITE HABITATS (ZOOMED FOR CLARITY)

5. Results

- 5.1 The headline results using the above habitats and calculations are given below (refer to the metric for full details).

Table 1: Headline estimated BNG values

FINAL RESULTS		
Total net unit change (Including all on-site & off-site habitat retention, creation & enhancement)	<i>Habitat units</i>	0.28
	<i>Hedgerow units</i>	0.07
	<i>Watercourse units</i>	0.00
Total net % change (Including all on-site & off-site habitat retention, creation & enhancement)	<i>Habitat units</i>	10.45%
	<i>Hedgerow units</i>	350.00%
	<i>Watercourse units</i>	0.00%
Trading rules satisfied?	Yes ✓	

6. Conclusions & Recommendations

- 6.1 The development includes the clearance of areas of modified grassland in the north of the site to install shepherd's huts and associated surfacing, decking, and lawn turf, and to extend the existing surfaced path. Works to install two shepherd's huts and extend the path to these have already been undertaken in 2024. No habitats other than modified grassland have been or are to be removed.
- 6.2 Ecological enhancements built into the development design include creation of a belt of mixed scrub between the path and the off-site woodland in the north of the site, enhancement of the modified grassland between the shepherd's huts area and the car park to other neutral grassland, planting of five new trees near the southern-most shepherd's hut, and planting of a firethorn (*Pyracantha*) hedgerow adjacent to the woodland. The hedgerow planting has already been carried out in 2024 simultaneously with installation of the two shepherd's huts, whilst the other enhancements remain to be completed. In terms of the BNG metric, these are sufficient to offset the loss of the baseline habitats on the site and satisfy trading rules.
- 6.3 **The headline results indicate that there is an estimated net gain of 10.45% for habitat units.**
- 6.4 **The hedge-line results show an estimated increase of 0.07 hedgerow units which corresponds to a 350% net gain.**
- 6.5 In England BNG is mandatory under Schedule 7A of the Town and Country Planning Act 1990 (as inserted by Schedule 14 of the Environment Act 2021). This came into force in February 2024 for major developments and April 2024 for minor developments. Under the legislation developers must deliver a biodiversity net gain of 10%.

7. Draft Habitat Creation, Management, and Monitoring Plan

- 7.1 A draft plan for the creation, management, and monitoring of the habitats of medium distinctiveness that are to be created on-site is provided below. These habitats include mixed scrub in good condition, other neutral grassland in good condition, and individual trees in moderate condition. The other habitats created include artificial unvegetated unsealed surface, modified grassland in poor condition, and non-native and ornamental hedgerow. These habitats do not require specific management to achieve their target condition and therefore are not included in the plan. This plan should be seen as an outline in draft only and should be formalised following planning consent.

Mixed Scrub

Creation

- 7.2 A belt of mixed scrub is to be created along the eastern / northeastern boundary, between the path and the woodland.
- 7.3 Instructions for the scrub creation and initial aftercare are as follows:
- Scrub planting should be carried out between November and March, avoiding periods of frost, snow, or waterlogged soil.
 - The ground must be cleared of vegetation and soil loosened prior to planting.
 - UK native structural shrub species should be selected, such as hawthorn (*Crataegus monogyna*), blackthorn (*Prunus spinosa*), field maple (*Acer campestre*), and hazel (*Corylus avellana*). Secondary species should also be incorporated to provide diversity, such as dogwood (*Cornus sanguinea*), dog rose (*Rosa canina*), wild privet (*Ligustrum vulgare*), and goat willow (*Salix caprea*).
 - Shrubs should be planted at a density of 1-2 shrubs per square metre.
 - Dig holes large enough to accommodate the root systems of the shrubs.
 - If using bare-root plants, soak the roots in water for 1-2 hours before planting to prevent drying out.
 - Place each shrub so the base of the stem is at soil level and spread the roots out gently. Fill the holes with soil, firming it down gently.
 - Apply a layer of mulch (such as wood chips or well-rotted compost) around the base of the plants to suppress weeds and retain moisture.
 - Water regularly during the first 2 years, especially in dry spells, to help the plants establish.

Management

- 7.4 Scrub should be managed through the removal of individual bushes, or bramble patches, as required in order to thin the habitat and maintain structural diversity, with varied age classes and small glades / rides. The scrub habitat should be managed on a minimum of a 4-year cycle, with no more than one quarter of the scrub removed in any given year, this should take place in September/October to fall outside of the bird nesting season, but prior to the hibernation period when hibernating amphibians, reptiles and hedgehogs may be present. The western edge of the scrub is to be managed more heavily to provide an edge habitat of lower height, scattered scrub with some tall grassland interspersed.

Monitoring

- 7.5 To ensure the mixed scrub is on track to achieve 'good' condition in the target time of 10 years, regular monitoring will assess the following characteristics:
- Whether the mixed scrub is a good representation of its habitat type with at least three native woody species and no dominance of a single species.
 - Whether a range of age classes (seedlings, saplings, young shrubs, and mature shrubs) are present.
 - Whether invasive non-native plant species or species indicative of sub-optimal condition are present.
 - Whether the scrub has a well-developed edge.
 - Whether there are clearing, glades or rides present.
- 7.6 Where condition criteria are not being met or are not on track to be met in the target time, the management approach will be reviewed and remedial measures implemented as appropriate.

Other Neutral Grassland

Creation

- 7.7 Other neutral grassland (wildflower meadow type grassland) is to be created either side of the path that connects the shepherd's huts area to the car park, and to the north of the car park.
- 7.8 Instructions for the grassland creation and initial aftercare are as follows:
- Initial works to create the grassland should be undertaken in spring/early summer (March – June) or autumn (September – November).
 - The existing grassland is to first be heavily cut back with cuttings removed after mowing. 50-70% bare soil patches are to be created prior to overseeding using harrowing, raking, or light tilling.
 - A UK native wildflower and grass seed mix will need to be selected to suit the soil type, drainage, and regional conditions. For example, Emorsgate EM1 General Purpose Meadow Mixture or similar.
 - The seed mix should be sown at a density of 4-5 g/m². The seeds can be mixed with damp sand or similar for even distribution. They can then be hand sown or sown with a seed spreader. Following distribution of the seeds, the ground must be firmed with a roller or by treading to ensure good soil contact. Any specific guidance given by the seed mix provider should be followed.
 - In the first year of establishment, the grassland should be mown regularly to a height of 5-10cm to prevent grasses from overshadowing emerging wildflowers. Cuttings must be removed to prevent nutrient enrichment. Dominant and/or invasive species should be regularly checked for, and spot-treated or removed as required. These include, but are not limited to, dock, thistles, common nettle, creeping buttercup, greater plantain, and cow parsley. Any invasive species listed on Schedule 9 of The Wildlife and Countryside Act must be immediately removed.

Management

- 7.9 After the first year of establishment, an annual routine can be adopted for long-term management of the grassland. Cuts will include:
- A spring cut – undertaken in March or April, the grassland is cut to 5-10cm height to remove dead grass and prepare for new growth, cuttings to be immediately removed.
 - A summer hay cut – undertaken between late July and end of August, after wildflowers have set seed, the grassland is cut to 5-10cm height, cuttings to be left to dry for a few days to allow seeds to drop before removing.
 - Autumn cutting– undertaken between September and November, sward height of the grassland to be kept below 10cm through mowing, to reduce grass dominance over winter, cuttings to be immediately removed.
- 7.10 No fertiliser is to be applied to the grassland. Herbicide should be used for spot treatments only. The grassland should be continually checked for dominant or invasive species, and removals undertaken as required.
- 7.11 Yellow rattle can be introduced to further help diversify the species present within the grassland. This is a semi-parasitic plant which feeds off the nutrients in the roots of nearby grasses, reducing the vigorous growth of the grass and allowing more delicate grassland herb species to develop.

Monitoring

- 7.12 To ensure the other neutral grassland is on track to achieve ‘good’ condition in the target time of 10-15 years, regular monitoring will assess the following characteristics:
- Whether the grassland is a good example of its habitat type with a consistently high proportion of characteristic indicator species present.
 - Whether the cover of bare ground is between 1% and 5%.
 - Whether the cover of bracken is less than 20% and cover of scrub is less than 5%.
 - Whether the cover of species indicative of sub-optimal condition and physical damage accounts for less than 5% of the total area, and whether any invasive non-native plant species are present.
 - Whether there are 10 or more vascular plant species per m² present.
- 7.13 Where condition criteria are not being met or are not on track to be met in the target time, the management approach will be reviewed and remedial measures implemented as appropriate.

Individual Trees

Creation

- 7.14 Five new native trees are to be planted near the southern-most shepherd’s hut.
- 7.15 Instructions for the tree planting and initial aftercare are as follows:
- The planting of bare rooted trees should be carried out between November and March, avoiding periods of frost, snow, or waterlogged soil. Container trees can be

planted throughout the year, but if planted in the summer they will need a lot more watering.

- Prior to planting, vegetation must be cleared in a one-metre circle where the tree will be planted. Competition for water and nutrients can severely affect trees, particularly when young. This circle around the tree should therefore be kept clear of grass and weeds for at least three years after planting, through weed-suppressant matting, application of a thick mulch or regular weeding.
- If using bare-root trees, soak the roots in water for 1-2 hours before planting to prevent drying out.
- Where the soil structure is good, maidens can be notch-planted. For larger trees, and where soil structure needs to be improved, a hole at least twice as wide as the tree's root ball and slightly deeper than the roots must be dug.
- Place the tree in the hole with the root collar (where the trunk meets the roots) at soil level. Do not bury the trunk. Fill in the hole, firming the soil gently.
- The trees should be staked with a short stake of no more than 30 cm above ground level. This will allow the tree to flex and strengthen the trunk and roots.
- Apply a 5-10cm layer of mulch (such as wood chips or well-rotted compost) around the base of the tree, leaving a gap around the trunk to prevent rot, to suppress weeds and retain moisture.
- Use tree guards or fencing to protect young trees from grazing animals. Guards should be checked regularly and adjusted if they are causing the tree any damage.
- Water regularly during the first 2-3 growing seasons, especially during dry periods.

Management

- 7.16 Stakes should be removed after 2-3 years, once the tree is stable.
- 7.17 Tree guards should be removed once the tree is well-established (typically after 3-5 years) or if the tree begins to outgrow the guard.
- 7.18 Once the trees are established, no ongoing maintenance should be required. Any trees that fail to establish, die, or fall should be replaced in the next appropriate planting season.

Monitoring

- 7.19 To ensure the trees are on track to achieve 'moderate' condition in the target time of 27 years, regular monitoring will assess the following characteristics:
- Whether native tree species have been used.
 - Whether there is any evidence of an adverse impact on tree health by human activities, including heavy pruning. The trees should retain at least 75% of their expected canopy.
 - Whether more than 20% of the tree canopy is oversailing vegetation beneath.

- 7.20 Where condition criteria are not being met or are not on track to be met in the target time, the management approach will be reviewed and remedial measures implemented as appropriate.

8. Wildlife Enhancements

Bats and Birds

- 8.1 To enhance the site for bats and birds known to be present within the local area it is recommended that two bat boxes and two bird boxes be installed within the site. Boxes could be installed on existing retained trees within the site.
- 8.2 Ideally bat boxes would be woodcrete or similar hard-wearing material (rather than the less durable wooden boxes) and should be installed at least 3m above the ground (where safe installation is possible), sheltered from strong winds and exposed to the sun for part of the day (usually south or south-west facing).
- 8.3 Example tree-mounted bat boxes are shown below: Schwegler 1FF bat box (below left, suitable for pipistrelle bats *Pipistrellus sp.*), and a Schwegler 2F bat box (below right, suitable for long-eared bats *Plecotus sp.*), or similar bat boxes.



- 8.4 Tree-hung bird boxes should comprise a mix of traditional '32mm round-holed' (below left: which are suitable for tits, sparrows, redstarts and nuthatches) and open-fronted boxes (below right: these are suitable for pied wagtails, robins and wrens) and also ideally be woodcrete or similar hard wearing material (rather than the less durable traditional wooden boxes). Boxes should be installed with an aluminium nail or screw to prevent tree damage between 2m and 4m above ground for round-holed and low down, below 2m, well hidden in vegetation for open-fronted boxes and (unless shaded by buildings or trees) be facing north or east.



Reptiles and Amphibians

- 8.5 **To enhance the site for reptiles and amphibians a ‘hibernaculum’ could be created in a sunny corner of the site.** This will use materials such as logs, inert hardcore, bricks or building rubble to form the body of each hibernaculum, ensuring that materials likely to decompose are not placed beneath bricks or rubble to avoid collapse. Woodchips or soil may be incorporated to fill some of the larger cavities within the structure.

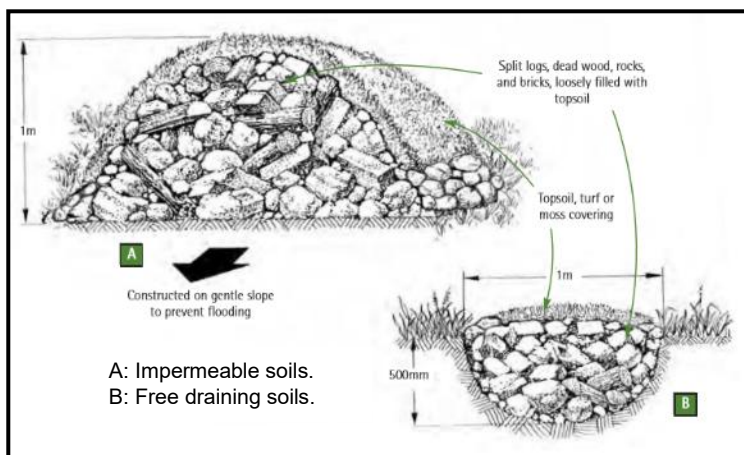
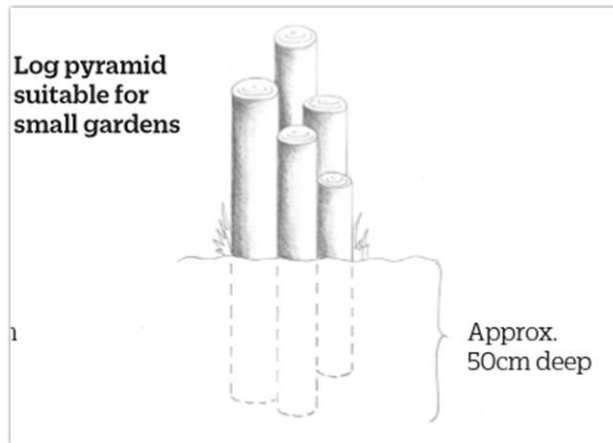


Diagram from Great Crested Newt Conservation Handbook



Stag Beetles

- 8.6 **A log stack could be created in a discrete corner of the site to provide dead wood habitat features for stag beetle and other species.**
- 8.7 A suitable log pile comprises of a variety of lengths of hard wood at least 5cm in diameter, this should be sighted in partial shade and the wood partially buried to prevent it drying out. See below diagram and picture below from the PTES ‘how to build a loggery’ factsheet, (<https://ptes.org/get-involved/wildlife-action/help-stag-beetles/>)



References

CIEEM (2013) *Competencies for Species Survey guidance documents*. Chartered Institute of Ecology and Environmental Management, Winchester

CIEEM (2017) *Guidelines on Ecological Report Writing*. Chartered Institute of Ecology and Environmental Management, Winchester

CIEEM (2021) *Good Practice Guidance for Habitats and Species*. Chartered Institute of Ecology and Environmental Management, Winchester

CIEEM (2022) *Code of Professional Conduct*. Chartered Institute of Ecology and Environmental Management, Winchester

Department for Communities and Local Government (2012). *National Planning Policy Framework*. Department of Communities and Local Government, London.

DEFRA (2023) *Defra Biodiversity Statutory Metric Auditing and accounting for biodiversity calculation Tool*

UKHab Ltd (2023). *The UK Habitat Classification Version 2.0* (at <https://www.ukhab.org>)