

Great Crested Newt Artificial Refugia Creation Note

Lady Margarets Park, Chirk, March 2024

The following technical note has been prepared by CSA Environmental on behalf of the Caravan and Motorhome Club in relation to Lady Margarets Park, Chirk (hereafter referred to as 'the Site'). It has been prepared to discharge Condition 6(b) of the planning permission (CHI P/2022/0066) granted by Wrexham County Borough Council, which states:

"6. No part of the development shall commence until details of the proposed Reasonable Avoidance Measures (RAMs) have been submitted to and approved in writing by the Local Planning Authority. The details shall include the following:

b) Details of an artificial amphibian hibernacula to be constructed adjacent to the site (Details of the design can be found in great crested newt mitigation guidelines - August 2001)"

1.0 Types of Refuge

- 1.1 Amphibians seek refuge in habitat features for overwintering and day and nighttime shelter. This document describes two types of refuge, a buried hibernaculum and an above ground log pile feature, and the subtle differences in functions that they perform. Such features provide opportunities for a range of other wildlife, including mammals and invertebrates.

Hibernacula

- 1.2 Amphibians hibernate to avoid cold and freezing conditions during winter and seek out ready-made holes or crevices to reach well insulated frost-free features. These are often below ground in thermally stable environments.
- 1.3 There are several different hibernacula designs. This text aims to provide information to facilitate the construction of a simple hibernaculum which may be provided with very little effort, financial cost and minimal disturbance to the existing habitat. The design mimics the natural conditions in which amphibians and reptiles have been found overwintering.

Log Piles

- 1.4 Log piles can perform a similar role to a hibernacula, providing sheltering opportunities. These above-ground features may be less thermally insulating for overwintering use but is of great value for

wildlife. They provide essential cover and additional structure to existing habitat for great crested newts, as well as other amphibians and reptiles. A mixture of log sizes can be used but larger logs are more thermally stable, retain higher humidity levels (important for amphibians) and take longer to degrade.

- 1.5 **A single below ground hibernacula** will be constructed to the south-west of the Site, as shown on the GCN Hibernacula Location Plan (CSA/1992/118), positioned away from potential development edge effects on well-drained soil, and in closest proximity to existing great crested newt populations to the west of Lady Margarets Park.
- 1.6 **A total of seven log piles** will be constructed within the fringes of the Site and adjoining field to the north, as shown on the approved Ecological Enhancements Plan (CSA/1992/112) and GCN Hibernacula Location Plan (CSA/1992/118).

2.0 Hibernacula

Design Considerations

- 2.1 In order to increase the suitability of artificial hibernacula the following points should be considered:
 - Location:
 - on a well-drained site, which will not be at risk of flooding; construction on a gentle slope will facilitate drainage
 - on a slope with a southerly aspect
 - in an area of suitable terrestrial habitat which provides areas of cover
 - where newts are likely to find it
 - The structure should be dense enough to remain frost free throughout the winter, with a capping of soil and vegetation to help stabilise temperature and humidity
 - Permanence of materials used; a combination of mineral (e.g. stone) and biodegradable materials (e.g. wood) is ideal for hibernacula.

Materials

- 2.2 A range of materials will be used including:
 - Cut logs, dead wood and brash
 - Stone, rock, clean brick rubble (without cement residues)
 - Coarse bark mulch, and
 - Soil; low nutrient soils/subsoils are recommended to promote wildflowers and discourage undesirable weeds.
 - Hibernacula can be over seeded with appropriate wildflower seed mix to promote good aesthetic and diversity or have existing wildflower turfs laid on top

Construction

Buried Hibernacula

- 2.3 Figure 1, below, illustrates the below ground hibernacula design. This design provides better insulation and is less prone to frost particularly in severe winters and it is less visually obtrusive. Figure 2. illustrates the above ground design taken from the Great Crested Newt Guidelines, with reference to below ground design with the bulk of fill material sited within an excavated depression where free-draining. Design dimensions should not be below c. 2m long, c.1m wide, with a below ground (c. 0.5m deep) and above ground (c 0.5-1m tall) portion.

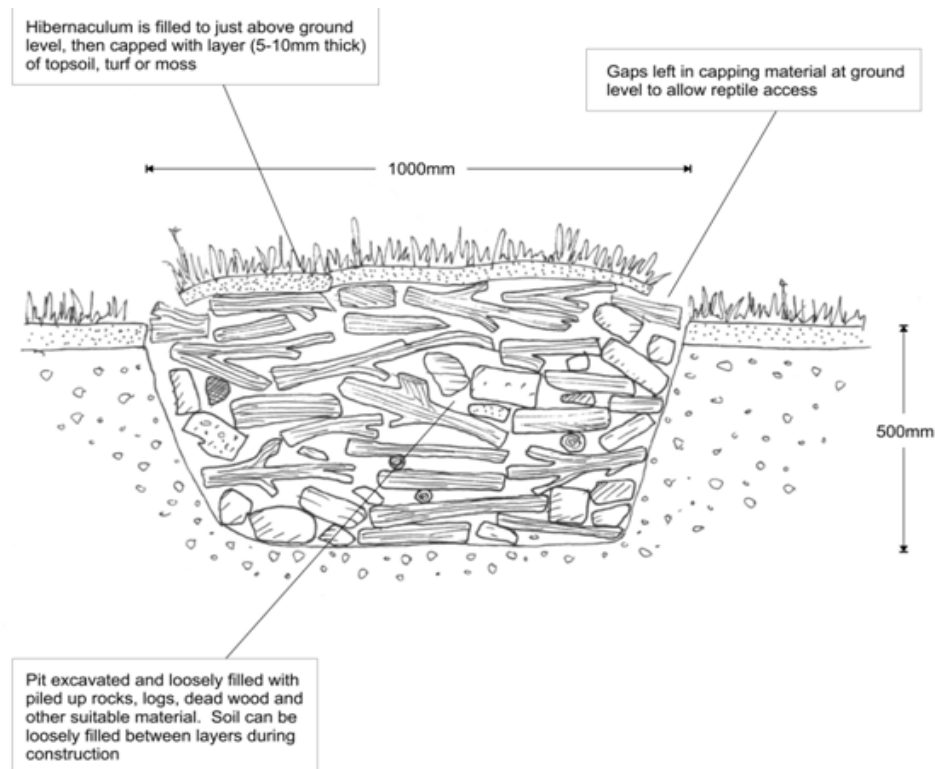


Figure 1. General Design of Buried Hibernacula Taken from Highways Agency (2005), Design Manual for Roads and Bridges, Volume 10, Section F.

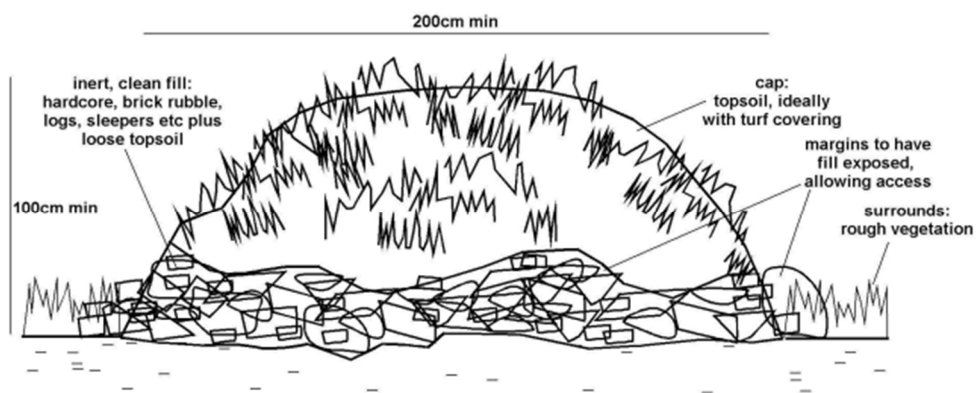


Figure 2. Suggested Design of Hibernaculum Taken from Great Crested Newt Mitigation Guidelines (2001) for impermeable substrates. Where free draining, the bulk of fill is sited in an excavated depression in the ground.

- 2.4 Once a final suitable location has been selected in the area identified, and the area marked out, top soil should be carefully removed so it can be re-laid on top. A small depression will be dug and excavated to c. 0.5m. Logs, dead wood, brash, coarse bark mulch, and/or brick rubble (using clean, inert material) will then be put loosely into place to create natural gaps. These piles will then be filled/covered with earth or suitable aggregate and then filled to c. 0.5m above ground level (allowing some access points to remain) and overlaid with the scraped off turf and/or seeded with wildflower seed mix during the landscaping implementation. This will vegetate to help provide an internal frost-free refuge for hibernation as well as foraging opportunities for when newts are active above ground.



Step 1 – Scraping off topsoil and excavating depression

Step 2 – Laying logs and materials into depression



Step 3 – Infilled and overlaid with topsoil, with log protruding to maintain access for wildlife

3.0 Log Piles

- 3.1 Figure 3, below, illustrates the above ground log pile design. It requires minimal digging and it adds more structural diversity to the site for amphibians, reptiles and small mammals to shelter.

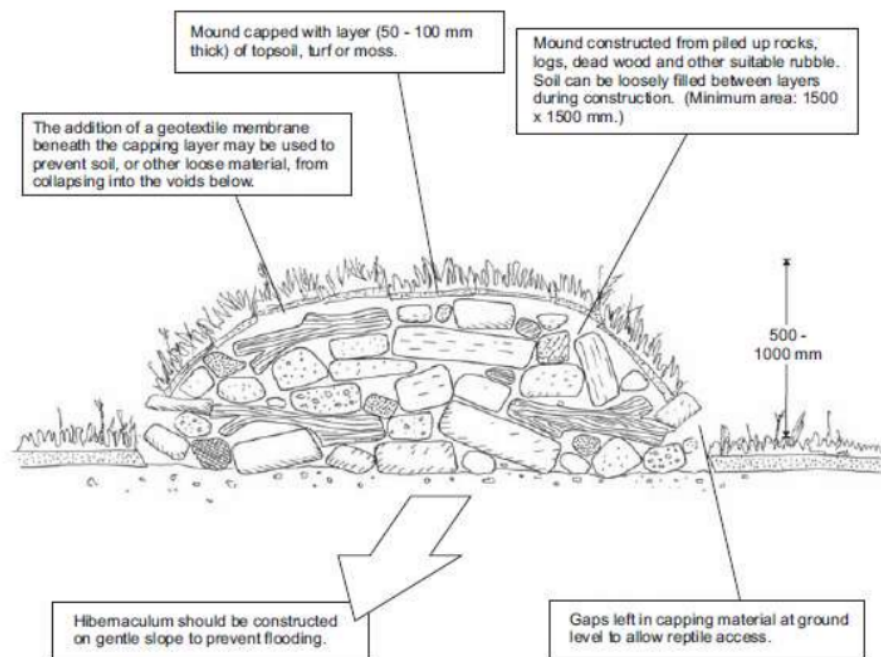


Figure 3. General Design of Above Ground Reptile Refuge Taken from Highways Agency (2005), Design Manual for Roads and Bridges, Volume 10, Section F.

- 3.2 A similar construction method and materials to below ground hibernacula are used for above ground log piles. Topsoil is first removed from the area where the log pile will be placed. Logs are placed in an arrangement at different angles, with a minimum c. 1m x 1m footprint, with tighter stacking in the centre and looser at the edge to create a range of environments and crevices. Log piles should contain sufficient large diameter material (30cm minimum).
- 3.3 Where there is concern material will be removed by the public, chicken wire/stock fencing will be pegged down over the top to secure the feature, with large gaps to allow access points for wildlife. The topsoil will then be placed back over the top to create a more stable temperature environment.



Above ground - Completed log pile pegged down with wire and gaps created for hedgehogs/amphibians/mammals with topsoil on top



Creation of above ground log pile hibernacula for amphibians and reptiles, using timber from surrounding on-site tree management

Creation of below ground hibernacula, suitable for great crested newt and other amphibians and reptiles. Located away from potential development edge effects on well drained soil, adjacent to woodland

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|  Existing shrub retained |  Below ground hibernacula |  Insect Hotels x4 in sunny locations in wildflower areas |
|  Margin of longer grassland |  Habitat log piles (using logs from tree management work) |  Bird boxes x3 on retained trees |
|  Walking route |  New standard trees (2x beach, 2x Oak, 2x Scots Pine) |  Bat boxes x2 on retained trees |