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BIODIVERSITY ENHANCEMENT STRATEGY

**LAND ADJACENT TO 1 HEOL TABOR,
CWMAFAN, SA12 9PS**

AMITY PLANNING CONSULTANTS

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Client:	Amity Planning Consultants
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VERSIONING AND QUALITY ASSURANCE

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The evidence which we have prepared and provided is true and has been prepared and provided in accordance with the guidance of The Chartered Institute of Ecology and Environmental Management's Code of Professional Conduct. We confirm that the opinions expressed are our true and professional *bona fide* opinions.

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1 INTRODUCTION

- 1.1 Wildwood Ecology was commissioned by Amity Planning Consultants (the client) to produce a Biodiversity Enhancement and Management Plan at Land Adjacent to 1 Heol Tabor, Cwmafan, SA12 9PS (the site) centred at grid reference SS 78212927729.
- 1.2 The site is subject to a full planning application for construction of residential housing with associated gardens and driveways.
- 1.3 The site, as described in the PEA report (WWE26018 PEA), comprised bramble scrub, other neutral grassland, sparsely vegetated urban land, built linear feature (fence and wall), and ditch.

Previous surveys

- 1.4 A Preliminary Ecological Appraisal (PEA) was undertaken by Wildwood Ecology in May 2026. The additional phase 2 surveys were carried out: badger walkover of adjacent woodland, bat static detector deployment surveys, great crested newt (Habitat Suitability Index assessment survey), and reptile presence/likely absence.

Scope of report

- 1.5 This Biodiversity Enhancement Strategy has been produced to detail of the ecological mitigation and enhancement measures to be provided to reflect those set out in Section 5 of the PEA.

2 BIODIVERSITY MANAGEMENT PLAN

Existing habitats

- 2.1 As shown in Figure 4, a Preliminary Ecological Appraisal confirmed the following habitats as present (with UKHabs Habitat Codes in parentheses):
- bramble scrub (h3d) – c.223 sqm;
 - other neutral grassland (g3c) – c.1033 sqm;
 - sparsely vegetated urban land (u1f) – c.820 sqm;
 - built linear features (u1e) fence – c.65m;
 - built linear features (u1e) wall – c.28m; and
 - ditch (r2c) – c.48m.
- 2.2 Sparsely vegetated urban land was present in extensive areas across the site.
- 2.3 Bramble scrub (patchy and not of sufficient structure to be considered suitable for dormouse) was present on the northern edge of the site, adjacent to the offsite woodland.
- 2.4 Other neutral grassland was present in several patches across the site.
- 2.5 A wooden fence and stone wall were present on the north and eastern boundaries.
- 2.6 A ditch was present on the west boundary of site.

Retained habitat

- 2.7 The following habitats will be retained:
- small section (c.436 sqm) of other neutral grassland;
 - fence;
 - wall; and
 - ditch.

Habitats to be enhanced or created

- 2.8 The following habitats will be enhanced or created (see also Figure 3):
- Six trees will be planted on the south-east and south-west aspects of site;
 - Shrub planting outside the proposed properties;
 - Bio-retention planting outside the proposed properties;
 - Grassland (turf and grass seeding) in the proposed gardens;
 - Bramble scrub on the northern aspect will be enhanced with native understorey planting; and
 - Wildflower planting on the northern and western aspects.

Habitat management prescriptions

Trees

- 2.9 The stand-alone trees that are to be planted (circa 6) will include the following species:
- Sea buckthorn; and
 - Green pillar oak.
- 2.10 New tree planting should be protected from livestock, deer, or rabbits where required, by use of biodegradable spiral guards.
- 2.11 Trees require little maintenance, however; they will be checked annually for the first five years to determine if they have established and are disease free. In the first year of planting, regular watering will be required especially during periods of hot weather until the trees are established. Any trees that have failed are to be replaced with a like for like tree.

Shrub planting

- 2.12 The plants are susceptible to failure and disease; therefore, they will be monitored on an annual basis to check for disease, failing plants. In the first year of planting regular water will be required especially during periods of hot weather until the plants are firmly established.
- 2.13 These plants may require some light pruning/shaping to ensure they do not become too large and outgrow other plants reducing light, water and nutrients. Too much growth from one species could reduce the diversity of that has been established.

Bio-retention planting

- 2.14 Bio-retention planting will comprise the following species:
- Pheasant's tail grass (*Anemanthele lessoniana*);
 - Apple blossom (*Choisya x dewitteana*);
 - Creeping blue blossom (*ceanothus thyrsiflorus repens*);
 - Green rocket (*Euonymus japonicus* 'green rocket');
 - White-ness (*Geranium macrorrhizum* 'white ness');
 - Hebe red edge (*Veronica* 'red edge'); and
 - *Lavandula angustifolia* Hidcote (English lavender).
- 2.15 These areas will need monitoring to keep water inlets clear of dead leaves.
- 2.16 Pheasant's tail grass should be subject to 'teasing out' of dead stems in early spring (after hard frosts pass) and should a trim be required, it should be ensured that at least 15cm of growth above the soil line is left.
- 2.17 Apple blossom should be trimmed in late spring or early summer immediately after main flowering period.

- 2.18 Creeping blue blossom should be pruned to one-third after late spring or early summer flowering period. Hard cuts into old wood must be avoided.
- 2.19 Green rocket rarely needs pruning, however, one in mid-to-late spring will encourage bushier growth.
- 2.20 White-ness will need dead-heading throughout the flowering season to encourage more blooms.
- 2.21 Hebe red edge will need dead-heading following blooms. It can be pruned in late summer, however, hard cuts into old wood must be avoided.
- 2.22 English lavender old flower spikes can be cut off in late summer and pruned in autumn, however, hard cuts into old wood must be avoided.

Native understorey planting

- 2.23 Native understorey planting will comprise the following species:

- English oak;
- silver birch;
- field maple;
- rowan;
- common hawthorn;
- common hazel;
- common dogwood;
- common holly;
- blackthorn; and
- elder.

- 2.24 The plants are susceptible to failure and disease; therefore, they will be monitored on an annual basis (for five years) to check for disease, failing plants. In the first year of planting regular water will be required especially during periods of hot weather until the plants are firmly established.
- 2.25 These plants may require some light pruning/shaping to ensure they do not become too large and outgrow other plants reducing light, water and nutrients. Too much growth from one species could reduce the diversity of that has been established.

Grassland

- 2.26 Amenity grassland, using Emorsgate mix 'EL1 Flowering lawn mix' is proposed for amenity areas between residential properties.
- 2.27 Wildflower planting, using Emorsgate mix 'EM1 Meadow mix' is proposed in a variety of locations across the site, but mainly contained a section north of the proposed residential gardens and around the existing ditch.
- 2.28 Wildflowers grow at different rates with some taking two years to germinate. The wildflower areas are to be monitored annually for five years to determine the level

of growth in the proposed areas. Should there be areas that have not taken, or the diversity of the mix is not present after five years then additional seed sowing will be required.

- 2.29 The grassland areas will be left uncut and strimmed only twice per year (once at end of July and September).
- 2.30 The new wildflower meadows should be weeded (by hand rather than by chemical means) on a regular basis to encourage wildflower growth and reduce the competition for nutrients by weeds.
- 2.31 The meadow should be mown regularly in the first year after sowing, to encourage the perennial flowers and grasses to make strong root growth. It should be cut to a height of 5cm (2in), about six to eight weeks after the seedlings appear, and repeat every two months throughout the first summer. These cuts can be lower, at 4cm (1½in).
- 2.32 Once established the following routine is to be followed:
- Spring cut – this is useful for meadows where the grass is lush and is crowding out the wildflowers. Cut to a height of 7.5cm (3in) and complete no later than the end of April. Sowing yellow rattle in August is an additional way to help manage grass-dominant meadows.
 - Main summer cut – this is also referred to as the ‘hay cut’ and removes the bulk of the material, which should either be composted or baled. This cut is done between late June and the end of August, depending on which plants you want to encourage. Cutting towards the start of this period favours spring flowers, such as cowslips, lady’s smock, selfheal and bugle. August cutting favours summer flowers, such as knapweed, devil’s bit scabious and lady’s bedstraw. Leave the cut material in place for a few days to allow the seeds to drop to the ground. Then rake up and remove, to help reduce soil fertility.
 - Autumn cut – this is particularly useful on fertile ground, to use up the nutrients. One or two cuts between the end of August and late November removes surplus growth and helps to keep grasses at bay, letting the wildflowers thrive.
- 2.33 Following the last cut of the season, all meadows can be kept mown, so the grass is short and neat through the winter. With any cut that produces substantial clippings, they should be removed and composted, to further reduce soil fertility. The above maintenance guidance has been taken from the RHS wildflower meadow maintenance guidelines <https://www.rhs.org.uk/lawns/wildflower-meadow-maintenance>

3 BIODIVERSITY FEATURES

Other biodiversity enhancements

Amphibians, including great crested newt, and reptiles

- 3.1 In order to compensate for the loss of terrestrial amphibian, and reptile, habitat, an artificial hibernaculum will be provided in the south and north-west corners of site. The hibernaculum will be designed similar to the suggested design in the GCN Conservation Handbook. The located site will need to be checked by a qualified ecologist prior to establishment to ensure no GCN/amphibians are present in the location. Providing wood and rock piles for shelter and over-wintering is important management for GCN. Dead wood and the thick leaf litter of old woodland and scrub provide a moist, stable environment they need. Provision of brash piles and buried dead wood will also provide suitable hibernaculum, as well as providing suitable habitat for saproxylic invertebrates and possibly suitable egg-laying habitat for stag beetles.

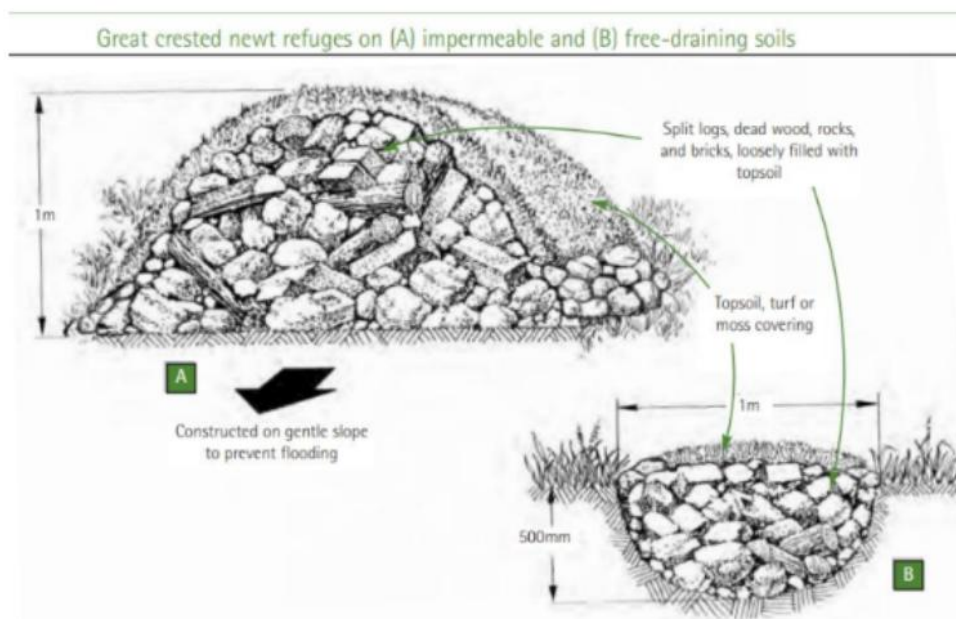


Figure 1 - Great crested newt hibernaculum (Great Crested Newt Conservation Handbook 2001).

- 3.2 The hibernaculum should be positioned within 200m of the offsite ditches (see Figure 3), and refuges that blend into the environment are best. Avoid unattractive, messy heaps which have the appearance of fly-tipping as these may generate complaints. Encouraging moss and grass to grow on wood/stone piles by adding soil to the top and inside of the heaps helps increase humidity and stability of the environment.

- 3.3 Enhancements will be carried out prior to any clearance works (except where cuttings/brash from these works is to be used for certain elements of the enhancement).

Bats

- 3.4 Bat roosting boxes will be incorporated into the newly constructed buildings (see Figure 3):
- Bats - inbuilt bat box, Ibstock Bat Box B, Ibstock Bat Box C, Schwegler 2FE wall-mounted bat shelter, Wildcare Integrated Eco Bat Box.
- 3.5 The boxes will be installed at a height of 3-4 metres, not above windows or doors that project artificial light. They must be positioned on south/south-east facing aspects in order to have enough solar gain.
- 3.6 A dark zone is to be established and maintained along the north, east and west boundaries of the site. A sensitive lighting strategy will need to demonstrate these dark zones of ideally 0.2 lux (on horizontal planes) and 0.4 lux (on vertical planes), taking into account internal and external lighting on the onsite hedgerows and edge of the offsite woodland.
- 3.7 Lighting guidance is provided in Appendix 1 and can be found in Guidance Note 08/23 - 'Bats and artificial lighting at night' (The Bat Conservation Trust, BCT, and the Institution of Lighting Professionals, ILP)
- 3.8 New tree planting and retention of hedgerow will continue to, and enhance, provision of commuting and foraging routes for bats.

Birds

- 3.9 Bird boxes suitable for a variety of species should also be placed on north or north-east facing aspects of the new buildings onsite (see Figure 3). The following designs or similar are recommended:
- General purpose, small bird species (Schwegler 1B, Schwegler 2M, Woodstone Nest Box - 32mm / 28mm);
 - Swifts (S brick, Vivara Pro Woodstone Swift Box, Ibstock Swift Eco, Cambridge Swift Brick, Schwegler 1A, Schwegler 18, Schwegler 16, Schwegler 1MF);
 - House martins and swallows (Woodstone single chamber house sparrow, Esco House Martin Nest Box, Eco Swallow Nest Bowl, Woodstone House Martin Nester, Schwegler No.9B Double House Martin Nest, Schwegler 10 Swallow Nest); and
 - Chaffinch, song thrush, wagtails, robin, and wren (open fronted nest box hung 1-2m high in shrub or on wall with surrounding vegetation).
 - Conifers could be planted onsite and maintained to provide nesting habitat for siskin. Additionally, maintenance of dense shrubs with plenty of understorey

would provide habitat for nesting chiffchaff, goldfinch, dunnock, and other nesting bird species.

- 3.10 Swift bricks will be installed on each of the new buildings. Integrated nest bricks will be installed in clusters of 2-3 in the north, east and west gable ends or close under the eaves away from windows and doors, at a height of 4m+, with clear flight access and no protruding ground floor roofs such as garages. https://www.swiftconservation.org/universal_swift_nest_brick02.pdf

Hedgehog

- 3.11 Any new fencing across the site should have gaps at the base to allow hedgehog to pass through them. These gaps should be approximately 15cmx15cm (see Figure 2 below) with at least one pass in each run of new fencing. If new concrete gravel boards are proposed for the fencing, then pre-cast hedgehog passes are available (see Hedgehog friendly fencing - Hedgehog Street/).

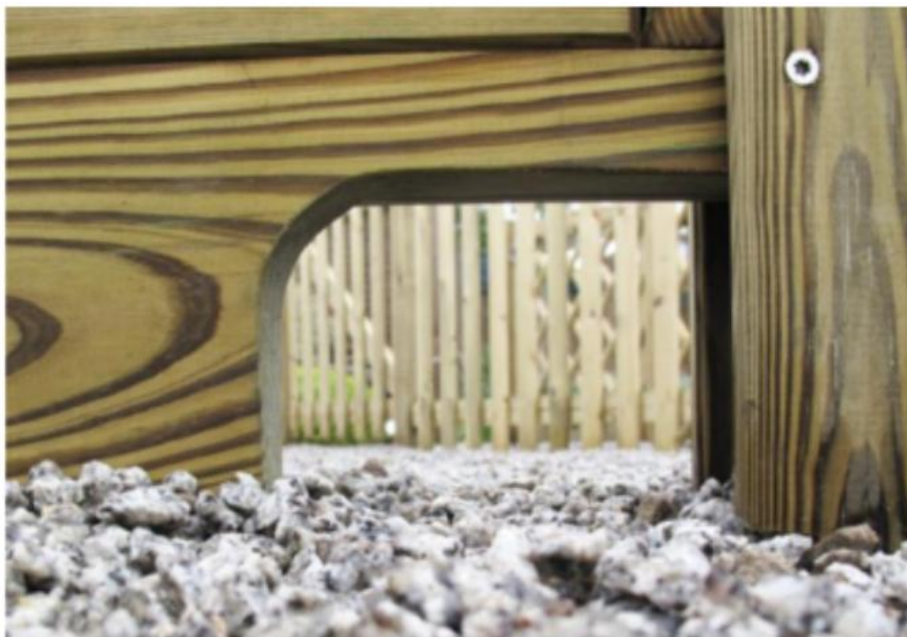


Figure 2 - Hedgehog pass in fence.

- 3.12 New hedgerows will not require similar gaps as the natural spacing will allow animals to pass through them.
- 3.13 Hedgehog hibernacula can be delivered through provision of a hedgehog house (Woodstone Hedgehog House). Alternatively, hedgehog houses can be built out of wood, logs, or bricks (guidance provided by the Natural History Museum ([How to make a hedgehog house | Natural History Museum](#)) and RSPB ([Build a Hedgehog House](#))). If a pre-built hibernacula is used, it should be well-maintained to reduce the risk of parasites spreading, so it should be cleaned once a year. Cleaning can be carried out in April, following hibernation.

Invertebrates

- 3.14 New planting, as specified in the landscape plans, will provide ample food plants for a variety of invertebrate species.

4 PRECAUTIONARY WORKING METHODS STATEMENT

- 4.1 The proposed site layout is shown on the proposed development plan (see Figure 5).
- 4.2 In this document, the likely impacts on ecological features, discussed in reference to precautionary working methods, relate to habitats and species likely to be onsite. The proposed development is within the zone of influence of Kenfig SAC and further consultation with the local planning authority and/or Natural Resources Wales will be required. The LPA, as the competent authority, will need to assess the need for, and if necessary complete, a Habitats Regulation Assessment (HRA), alongside consultation with NRW.
- 4.3 The works will involve the removal of areas of grassland, sparsely vegetated urban land, and bramble scrub to be enhanced with native understorey planting. The ditch will not be directly impacted.
- 4.4 With regards to species, there will be no impacts on species once the development is completed and operational. However, there may possibly be short term and temporary impacts during the pre-construction and construction phases in relation to common amphibians, dormouse, hedgehog, nesting birds and reptiles.
- 4.5 This protected species method statement therefore provides practical measures to avoid or reduce impacts on biodiversity during all phases of works: pre-construction phase management; clearance phase management; construction phase management; and post-construction & operational phase management.

Practical measures to avoid or reduce impacts on biodiversity during construction

Timing of construction-type activities

- 4.6 All vegetation clearance works above 300mm will be undertaken between February and March inclusive. The aim of these time periods is to reduce the impact on species that may be present, however there may be some overlap between species. The following periods (inclusive) will be considered:
- Nesting bird season: March – September
 - Aquatic season for GCN: March – June
 - Terrestrial season for GCN: June – February (it should be noted that GCN can be either in ponds or in terrestrial habitats during these periods)

- Brumation for reptiles and amphibians: November – January (temperature dependent). No groundbreaking of suitable habitat is to be undertaken in this period.
- November – March: Dormouse hibernation period where dormouse can be found in leaf litter.
- March – October: Dormouse active in hedgerows, trees and scrub.

4.7 Practical measures that will be implemented to avoid or reduce impacts prior to, during and post-development, are as follows.

Pre-construction phase (including site set up)

- 4.8 Before any works commence, the appointed ECoW will provide a site induction and 'toolbox talk' informing contractors of the avoidance measures outlined in this document relating to the protection of habitats and species and what to do should any unplanned activity compromise the protection of all retained on-site habitats, or should any protected species be found during works.
- 4.9 The clearance area will be demarcated by the contractor.
- 4.10 An Ecological Clerk of Works (ECoW) will be present onsite during clearance of suitable habitat (grassland, brick/wood/refuse piles) where required.
- 4.11 The location of the temporary storage areas will be considered and detailed prior to any works being conducted. The location must be positioned away from onsite habitats, preferably on a dedicated hardstanding area and where any spillage/run off can be contained.
- 4.12 The location of storage areas for soils, materials, spoils and waste, oils, fuels and chemicals will be considered and detailed prior to any works being conducted. The location will be positioned away from onsite habitats, preferably on a dedicated hardstanding area and where any spillage/run off can be contained.
- 4.13 A site diary or record of attendance by the ECoW will be kept by the Site manager or Lead contractor.
- 4.14 The hibernaculum (detailed in section 3.1-3.3 and Figure 1), and location shown in Figure 3) for amphibians and reptiles will be created prior to any clearance works (except where cuttings/brash from these works is to be used for certain elements of the enhancement) to provide additional areas of refuge during clearance and construction.
- 4.15 A Construction Environmental Management Plan (CEMP) will need to be in place to prevent contamination of the onsite culvert.

Clearance phase

- 4.16 Care will be taken when clearing ground prior to development, and if evidence of wildlife are found (such as the presence of newts (palmate or smooth), lizards

(common), snakes (grass snake), hedgehogs, reptile sloughs or bird nests) work will stop immediately while the ECoW is contacted for advice and support.

- 4.17 Woodchippers should be avoided where possible, with arisings used to create log piles and/or brash piles within retained habitats. If woodchippers are required, the chipping should not be sprayed but piled in suitable locations identified by the ECoW to create habitat piles.

4.18 No vegetation clearance below 500mm, tree removal or groundbreaking works are to be undertaken between November and February when amphibians and reptiles are in brumation and dormouse are in hibernation.

Winter clearance

- 4.19 Winter vegetation clearance to ground level should be avoided in the first instance and is only appropriate if clearance outside of the hibernation period is not possible and under judgment of an ECoW.
- Following a toolbox talk, trees and scrub may be cut using handheld tools to 30cm only, to avoid impacts to hibernating animals.
 - If vegetation requires removal to ground level, a search by the ECoW will be required before the 2nd cut.
- 4.20 Where required (between October to February, inclusive), scrub will then be cut using handheld tools to 30cm to allow full sight of the ground and litter layer. The ECoW will thoroughly check the cut area for reptiles, dormouse nests and other species. Once the area is confirmed clear, vegetation can be taken to ground level.
- 4.21 If any species or nests are found while the ecologist is not present, these will be left in situ and the ecologist contacted for advice.
- 4.22 If areas/features suitable for hibernating reptiles are found during winter clearance these should be avoided in the first instance. If not possible, they will require supervision of an ecologist during hand digging/ dismantling to ensure no hibernating reptiles are injured/ killed during works. Any hibernating reptiles will be moved by the ECoW to suitable retained brash pile created during vegetation clearance.

Summer clearance

- 4.23 Should clearance be required in spring/summer (April – September, inclusive), a three stage cut will be completed while reptiles, dormouse, amphibians including great crested newt, are active. The aim being to encourage any reptiles and amphibians that may be present into adjacent habitat and make the construction area unsuitable for them:
- Following a check of any suitable vegetation by the ECoW for the species listed above, vegetation will be cut to 30cm on Day 1.

- On Day 2 at least 48 hours later, the ECoW will carry out a fingertip search of the remaining vegetation before it is cut to 15cm.
 - Following another 48 hours, on Day 3, the ECoW will hand search the remaining habitat for presence of reptiles and/or common amphibians prior to topsoil stripping should it be required. Strimmers will move directionally from south/north/east to west, to areas of retained habitat to allow safe dispersal of the reptiles to retained habitats. Any debris, brash or rock piles or walls will be dismantled/worked upon by hand under the supervision of the ECoW outside of the winter period to prevent impacts to hibernating animals.
- 4.24 Any arisings from vegetation clearance will be used to create log piles and/or brash piles within retained habitat in a suitable location identified by the ECoW.
- 4.25 To facilitate construction works in winter, any de-vegetated areas should be maintained to ground level to prevent wildlife from moving back in and occupying the areas cleared during the active seasons.
- 4.26 If amphibians, reptiles, or hedgehog are found during clearance, they will be removed by hand to areas of suitable habitat away from the working area, such as retained scrub or grassland that will not be affected by the works. **In the highly unlikely event that GCN or dormouse are found, all works will cease,** consultation with NRW will be required.
- 4.27 If clearance during bird nesting season (March – August inclusive) cannot be avoided, a nesting bird check will be required immediately ahead of any proposed works and must be carried out by a suitably qualified person. **If evidence of nesting birds is found during any of the activities listed below, all works will cease** and the ECoW will mark a 10m buffer around any active nests until the young have fledged.

Ground breaking works

- 4.28 All vegetation and root balls will be removed prior to excavation work as per the vegetation clearance methodology specified above to ensure the area is unsuitable for reptiles/dormouse/other species. To facilitate construction works in winter, any de-vegetated areas should be taken to ground level before hibernation begins and then maintained at ground level to prevent wildlife from moving back in and occupying the areas cleared during the active seasons.
- 4.29 During October – April (inclusive) groundbreaking work should be avoided in any areas remaining with crevices or holes that could be utilised by hibernating reptiles. If any suitable areas remain, they will require careful hand digging under supervision of an ecologist to ensure no reptiles are present. This may only be carried out in smaller areas deemed suitable by the ECoW. Only once no crevices remain will the area be suitable for mechanical excavation. If a hibernating reptile

or other species is found during hand digging, the ECoW will move to a suitable location outside the construction areas.

Reptiles

- 4.30 Common reptile species have been recorded onsite, therefore, their presence onsite during works is considered likely. However, reptiles were only recorded onsite on the south-facing bank on the northern aspect of site and the bank itself to be retained and the scrub and grassland edge habitats to be enhanced with native understorey planting and wildflower planting, respectively.
- 4.31 As such, a reptile mitigation strategy will likely be required, however the precautionary working methods detailed in this document incorporate the main elements. All vegetation clearance will be supervised by a suitably qualified ecologist who will undertake a fingertip search of the habitats to be removed.
- 4.32 Vegetation clearance is to be undertaken when reptiles are active (February – October). No vegetation clearance below 500mm, tree removal or ground breaking is to be undertaken between November and February when amphibians and reptiles are in brumation.
- 4.33 Vegetation will be cleared in a directional manner (from north/south/east to west to areas of retained habitat) in order to make the terrestrial habitat less likely to be used. The clearance will occur in a phased cut with an ecologist onsite to supervise the clearance and carry out a check of the vegetation prior to cutting:
- Following a check of any suitable vegetation by the ECoW for the species listed above, vegetation will be cut to 30cm on Day 1.
 - On Day 2 at least 48 hours later, the ECoW will carry out a fingertip search of the remaining vegetation before it is cut to 15cm.
 - Following another 48 hours, on Day 3, the ECoW will hand search the remaining habitat for presence of reptiles and/or common amphibians prior to topsoil stripping should it be required. The vegetation will then be reduced to disturbed soil to make it more unsuitable for reptiles and common amphibian species.
- 4.34 Brush piles will be created, prior to the clearance works, adjacent to the onsite ditch to provide suitable refuge habitat for onsite reptiles.
- 4.35 To prevent reptiles re-entering the development site once it has been cleared of vegetation the site is to be maintained at all times prior to works beginning in a state of unsuitability for reptiles. Reptile fencing will be installed around development areas and retained site boundaries to prevent the dispersal of slow worm, grass snake, and common lizard into the work area. As all reptile records were found in the scrub habitat on the bank on the northern aspect of site, findings of reptiles during the works in the remainder of the site will be unlikely.

- 4.36 HERAS fencing will be erected around the site to protect retained habitats (ditch area) from incursion/damage from construction efforts.
- 4.37 All rubble piles onsite will be removed by hand and immediately taken offsite.
- 4.38 All of the above activities will be undertaken with ecological supervision.

Construction phase

- 4.39 A 5m buffer protected by secured heras fencing is to be placed around the retained habitats (ditch and immediate habitat) to prevent encroachment of machinery during or accidental damage to the habitat during the construction phase. The fencing can be removed on completion of the external construction phase of the build.
- 4.40 Any materials stored overnight will be raised above ground on pallets to prevent animals sheltering underneath them. Building waste will be put in skips and not be left on the ground to prevent wildlife taking refuge in it. Concrete will not be left unset overnight, or suitable barriers erected to prevent animals accessing the concrete. Machinery will be stored so that animals cannot come into contact with them.
- 4.41 No equipment will be stored within habitat suitable for nesting birds, hedgehog, amphibians or reptiles. If equipment storage is required, this will be restricted to a designated works compound located on an area of hardstanding.
- 4.42 Trenching or excavations will be backfilled or securely covered if left overnight. If any excavation must be left open overnight, the contractor must ensure that one end of the trench is shallow sloping so that any animals falling into the excavation can escape. Alternatively, the excavation can be fitted with a plank, or similar, to act as a means of escape. The excavation will be checked for the absence of animals prior to works re-commencing.
- 4.43 No night-time working shall be undertaken, and no additional lighting installed during works in order to avoid impacts to nocturnal species.
- 4.44 Periodic inspection by the ECoW will occur to ensure there are no issues with the above measures.
- 4.45 A locked gate will be installed on the close-boarded fence surrounding the bank (with enhanced scrub and wildflower planting) to ensure access for Tai Tarian maintenance team to carry out monitoring/ maintenance of the planting.

Post-construction and operational phases

- 4.46 On completion of works the ECoW will provide advice and support on the creation or re-creation of habitats, specifically in relation to the creation of the wetland area and siting of bat and bird boxes.

- 4.47 The ECoW will also confirm that lighting around the whole site will be kept to a minimum to avoid disturbance to nocturnal wildlife, including bats and hedgehog.
- 4.48 The ECoW will provide a site handover to the site manager or lead contractor, and client if required.

5 BIODIVERSITY MONITORING AND REPORTING

- 5.1 The recommended design of bat and bird boxes (woodcrete) means there will be greater longevity of the enhancements. These will be checked every 5 years for deterioration and will be replaced as required.
- 5.2 The meadow and tree planting will be monitored annually for five years to ensure plants have survived and are growing.
- 5.3 The contractor will be responsible for all maintenance and monitoring of onsite enhancements and habitat creation for a 12-month period following the completion of the works and will be responsible for any defects due to faulty materials, including plant failures, or workmanship during this time. The Contractor shall carry out maintenance work at suitable intervals and in suitable weather conditions.

6 CONCLUSION

- 6.1 Providing that the actions outlined in this document are successfully implemented, this strategy should demonstrate that biodiversity enhancements can be successfully integrated into the proposed development.
- 6.2 This Biodiversity Enhancement Strategy is considered sufficient to discharge any relevant biodiversity conditions related to the submitted planning application, subject to a review of condition wording and any amendments required to this document prior to agreement with the local planning authority.



Figure 3 - Enhancement plan. Blue circles – in built bat boxes. Red circle – swift bricks. Orange circle – house martin and swallow. Purple circles – conifers planted for siskin. Pink circle – open fronted nest box hung 1-2m on wall with surrounding vegetation for chaffinch, song thrush, wagtails, robin and wren. Green circle – general purpose bird box on fence. Green triangles – reptile/amphibian hibernacula. Brown triangle – hedgehog house.



Key

- | | | |
|---------------|-------------------------------|------------------------------------|
| Target notes | Habitats | r2c- ditches |
| Site boundary | g3c - other neutral grassland | u1e - built linear features |
| | h3d- bramble scrub | u1f- sparsley vegetated urban land |

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Figure 4 - PEA map.



Figure 5 - Development plans.



SOFT LANDSCAPE KEY

- EXISTING TREES TO BE RETAINED
- PROPOSED TREE PLANTING (Refer to schedule for species)
- PROPOSED SHRUB PLANTING (Refer to schedule for species/densities)
- PROPOSED HEDGEROW PLANTING (Refer to schedule for species/densities)
- PROPOSED GRASS TURF (Areas to be turfed with Rotax Medallion)
- PROPOSED GRASS SEEDING (Emergence SL1 - Flowering Lean Mix)
- PROPOSED NATIVE UNDERSTOREY PLANTING (Refer to schedule for species/densities)
- PROPOSED WILDFLOWER HABITAT 1 (Emergence SL1 - Meadow Mix)
- PROPOSED WILDFLOWER HABITAT 2 (Emergence SLB - Wetland Mix)
- LANDSCAPE RETAINED AS EXISTING

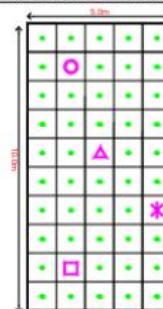
PLANT SCHEDULE

TREE PLANTING					
NO.	SPECIES	DENSITY	HEIGHT (m)	ROOT BALL (cm)	TOTAL
1	Quercus robur (Feathered)	150-200 BR	15	150	15
2	Quercus petraea (Feathered)	150-200 BR	15	150	15

SHRUB PLANTING					
NO.	SPECIES	DENSITY	HEIGHT (m)	ROOT BALL (cm)	TOTAL
1	Salix caprea (Feathered)	150-200 BR	15	150	15
2	Salix alba (Feathered)	150-200 BR	15	150	15
3	Salix purpurea (Feathered)	150-200 BR	15	150	15
4	Salix viminalis (Feathered)	150-200 BR	15	150	15
5	Salix glauca (Feathered)	150-200 BR	15	150	15
6	Salix elaeagnifolia (Feathered)	150-200 BR	15	150	15
7	Salix purpurea (Feathered)	150-200 BR	15	150	15
8	Salix viminalis (Feathered)	150-200 BR	15	150	15
9	Salix glauca (Feathered)	150-200 BR	15	150	15
10	Salix elaeagnifolia (Feathered)	150-200 BR	15	150	15

HEDGEROW PLANTING					
NO.	SPECIES	DENSITY	HEIGHT (m)	ROOT BALL (cm)	TOTAL
1	Salix caprea (Feathered)	150-200 BR	15	150	15

NATIVE UNDERSTOREY PLANTING MATRIX

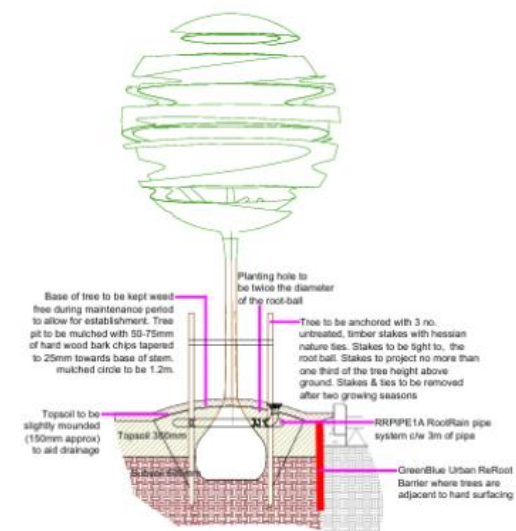


GENERALLY:-

Plant into existing ground. Existing scrub to be removed. Ground to be cultivated and organic material incorporated (100mm well-sieved mushroom compost or similar approved). Plantations to be maintained until trees for minimum of 2 years. All plants dying of natural causes during this period to be replaced. Trees to be planted as diagram and fully stated. Transplants planted in random groups of three, five or seven of single species and pruned back by one third.

- 1 no/module Quercus robur (Feathered) 150-200 BR
- 1 no/module Betula Pendula (Feathered) 150-200 BR
- 1 no/module Acer campestre (Feathered) 150-200 BR
- 1 no/module Sorbus aucuparia (Feathered) 150-200 BR
- 40 no/module Crataegus monogyna 80-80(h) BR (30%)
- Corpus arvensis 80-80(h) BR (30%)
- Cornus sanguinea 80-80(h) BR (20%)
- Ilex aquifolium 80-80(h) CON-PP (15%)
- Prunus spinosa 80-80(h) BR (15%)
- Sambucus nigra 80-80(h) BR (10%)

TREE PIT IN SOFT LANDSCAPE



TREE PIT NOTES

No container/root-balled tree shall be supplied and planted until it has been found to be compliant with BS 5545:2014, Table 1, P.21

TOPSOIL:-

300mm site won topsoil. Approved for use by a suitably qualified soil scientist in receipt of the landscape proposals drawing

SUBSOIL:-

600mm insitu subsoil. Approved for use by a suitably qualified soil scientist in receipt of the landscape proposals drawing Backfilling to reinstate the pre-existing soil profile

Areas around proposed trees to be securely fenced prior to commencement of construction operations on site to avoid compaction / contamination of soils.

Non-biodegradable & biodegradable root-ball wrappings to be removed. Where root-ball collapse is a concern, Wrapping to be cut & peeled back to one-third root-ball height. Peeled wrapping to be removed and not folded back into the root-ball.

Mulch circles around trees shall be maintained for at least 3 years post-planting.

TDA
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CLIENT: BLUEFIELD LAND

DRAWING NUMBER: TDA-3165-01

SCALE: 1:200 @ A1

DATE: MAY 2020

PROJECT: HEOL TABOR, CWMAFAN

DRAWING TITLE: DETAILED SOFT LANDSCAPE PROPOSALS

Figure 6 - Landscape plans.

APPENDIX I: LIGHTING GUIDANCE

As foraging and commuting bats are confirmed to be present on or close to the site, Guidance Note 08/23 - 'Bats and artificial lighting at night' (The Bat Conservation Trust, BCT, and the Institution of Lighting Professionals, ILP) will be followed:

- All luminaires should lack UV elements when manufactured. Metal halide, compact fluorescent sources should not be used.
- LED luminaires should be used where possible due to their sharp cut-off, lower intensity, good colour rendition and dimming capability.
- A warm white light source (2700Kelvin or lower) should be adopted to reduce blue light component.
- Light sources should feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats (Stone, 2012).
- Internal luminaires can be recessed (as opposed to using a pendant fitting - See Figure 5) where installed in proximity to windows to reduce glare and light spill.
- Waymarking inground markers (low output with cowls or similar to minimise upward light spill) to delineate path edges (see Case Study 1).
- Column heights should be carefully considered to minimise light spill and glare visibility. This should be balanced with the potential for increased numbers of columns and upward light reflectance as with bollards.
- Only luminaires with a negligible or zero Upward Light Ratio, and with good optical control, should be considered - See ILP GN01.
- Luminaires should always be mounted horizontally, with no light output above 90° and/or no upward tilt.
- Where appropriate, external security lighting should be set on motion sensors and set to as short a possible a timer as the risk assessment will allow. For most general residential purposes, a 1 or 2 minute timer is likely to be appropriate.
- Use of a Central Management System (CMS) with additional web-enabled devices to light on demand.
- Use of motion sensors for local authority street lighting may not be feasible unless the authority has the potential for smart metering through a CMS.
- The use of bollard or low-level downward-directional luminaires is strongly discouraged. This is due to a considerable range of issues, such as unacceptable glare, poor illumination efficiency, unacceptable upward light output, increased upward light scatter from surfaces and poor facial recognition which makes them unsuitable for most sites. Therefore, they should only be considered in specific cases where the lighting professional and project manager are able to resolve these issues.
- Only if all other options have been explored, accessories such as baffles, hoods or louvres can be used to reduce light spill and direct it only to where it is needed. However, due to the lensing and fine cut-off control of the beam inherent in modern LED luminaires, the effect of cowls and baffles is often far less than anticipated and so should not be relied upon solely.