Ecological Mitigation & Management Plan

Land at former Dinas Yard, Pembrey Housing Development

February 2022 Rev.4

(Original December 2019)

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CONTENTS

1. Introduction

I&G Ecological Consulting Ltd were contracted to produce an Ecological Mitigation & Management Plan (EMMP) for a proposed development of 80 dwellings at the former Dinas Yard in Pembrey, Llanelli. Outline planning permission has been secured in 2018, and now preparations are underway for an application for Approval of Reserved Matters

Carmarthenshire County Council's Ecologist required a condition be imposed on the planning permission, which states that:

"At reserved matters stage a detailed ecological mitigation, management, enhancement and monitoring plan identifying all necessary ecological retentions, enhancements, creation, mitigation and ongoing management measures for the lifetime of the development, delivering the ecological recommendations listed within Sections 6.2-6.9 of the Preliminary Ecological Appraisal and Badger Survey by Baker Consultants dated 14th June 2016, Section 4 of the reptile method statement by BE Ecology dated July 2016, detail contained within the Dormouse Licence Method Statement by BE Ecology dated September 2016, the Ecology section of the CEMPPP by Evans Banks Planning Ltd dated November 2016 and the NRW response dated 10th April 2017 detailing dormice requirements, must be submitted to and approved in writing by the Local Planning Authority. The plan shall then be implemented as approved."

This EMP is an over-arching report which brings together mitigation methods, management and monitoring as detailed in a number of supporting ecological survey reports undertaken between 2015-2017;

Preliminary Ecological Assessment & Badger Survey - Baker Consultants 14/6/16
Dormouse Licence Method Statement – BE Ecology Sept. 2016
Bat Survey – M. Carroll 29/05/15
Reptile Method Statement – BE Ecology July 2016
Construction Environmental Management & Pollution Prevention Plan – *Evans Banks Planning Ltd dated* Nov. 2016
NRW consultation response (detailing Dormouse requirements) – 10/4/17
Indicative Site Layout *Evans Banks Planning Ltd dated* July 2016
Location Plan – *Evans Banks Planning Ltd dated* May 2016
Proposed site layout – Dec 2019
Landscaping Plan – (AE Architectural design 03/03/21)

2. Site Location and Description

The Dinas Yard site is located on the southern outskirts of Kidwelly, just off Pembrey Road. See Fig. 1 for location.

The site consists of former industrial units, associated yards and storage material areas, with an improved agricultural grassland parcel to the east. See Fig. 2 for aerial image.

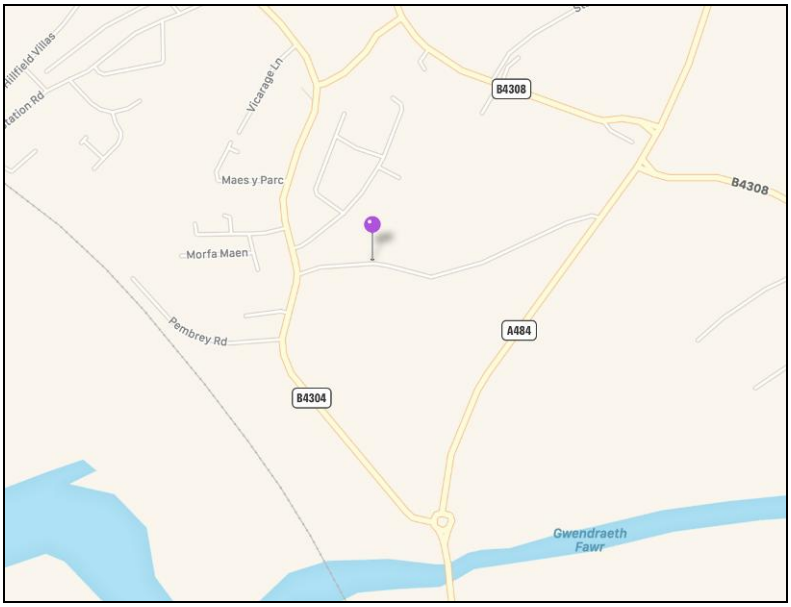


Figure 1. Location of Dinas Yard, Kidwelly SA17 4TF. Grid Ref. SN 410 063

Figure.2. Google Earth image of Dinas Yard (April 2021)

A walk-over site visit was undertaken by I&G Ecology Ltd. on 9th December 2019, where the site was found to be much altered from the original descriptions and aerial images contained in the supporting reports listed above. See Figs. 3 and 4.

Figure 3. Google image taken 2018, showing buildings have been demolished but grassland still managed for agriculture.

All buildings have been demolished and some of the resulting spoil is piled on the remaining building platform/concrete yard areas.

Figure 4. Site of demolished buildings and resultant waste piles

There is very little scrub vegetation remaining in the former buildings/yard area and the Improved Grassland field has been modified such that it now resembles Previously Developed Land; it appears that the grassland has been covered with spoil; possibly sub-soil, rubble and stone, which has since begun to re-vegetate in a typical manner of such brownfield substrates. There is a large tump of material in the far NE end of the site, which is well-vegetated by grassland and tall ruderal species, behind which is a small area of what

is probably original grassland. A long narrow bund runs along the western boundary of the former grassland area. See Figs. 5 and 6.

Figure 5. Former Improved Grassland now "made ground"

Figure 6. Revegetating "made ground" with long bund adjacent to hedge

3. Sensitive Ecological Receptors

Ecological mitigation is required in order to reduce potential harm to legally protected species and habitats (ecological receptors). The ecological surveys undertaken between 2015-16 identified a number of sensitive habitats and species and each report provides

details of the mitigation required in order to prevent harm to species and/or damage to habitats (see section 4).

3.1 Habitats

3.1.1 Hedgerows (with mature trees):

Good quality hedgerow habitat forms much of the northern site boundary, running alongside the former railway and is described as having "*closely packed mature shrubs and trees with a thick and dense canopy*".

Further description of the site's hedgerows is details in the Dormouse Licence Method Statement; "*The hedges to the south and north east of the agricultural fields were dominated by hawthorn, elm, blackthorn and grey willow with occasional pedunculate oak. These hedges were thin with leggy plants and little understorey*."

The hedge along the boundary between the field and Yard no longer exists but was described in the Dormouse Licence Method Statement as being "*comprised mainly of hawthorn with hazel and bracken. There is a stand of Japanese knotweed along it near a mature hazel under which ten hazelnuts showing characteristic signs of being opened by dormice were found (location shown on Figure 3). The vegetation in the hedgerow is dense although the woody hedge species appear to be somewhat sparse and swamped by bracken in a number of locations*".

3.1.2 Scrub:

The scrub has been described in the PEA thus "*Between the buildings and the improved grassland field, an area of dense scrub (TN 4, Figure 5), rough grassland/scattered scrub…"*. "*Scattered scrub is also present in places, largely dominated by willow Salix sp., butterfly-bush Buddleja davidii and bramble Rubus fruticosus agg*."
The scrub will provide good nesting opportunities for birds; due to its dense nature it provides ideal seclusion for nesting and rearing young.

3.1.3 Trees

There are a number of mature trees, some forming scrub belts, others more associated with hedgerow. The PEA notes: "*The northern margins of the Site are lined with willow scrub along the public footpath, whilst the western boundary partially comprises a line of semi-mature/mature trees, mainly wych elm Ulmus glabra and sycamore Acer pseudoplatanus. Further trees are present along the southern boundary, particularly towards the eastern end of the Site, and to the west of the Dinas Yard building complex (TN 5). These again mainly comprise sycamore and wych elm, with occasional hazel Corylus avellana to the west. A prominent mature oak tree is also present on southern boundary (TN 6)*."

3.1.4 Flight lines/commuting corridors:

Wildlife species using the scrub vegetation and the hedgerow/tree lines along the site boundaries would be deterred from foraging and commuting here by the presence of increased light levels at night.

3.2 Protected species

PEA surveys and individual species surveys as aforementioned have indicated that some species such as Reptiles, Amphibians, Dormice, Birds and Bats may be affected by the development.

3.2.1 Badger

The PEA did not find any evidence of Badger however it deemed the site as suitable for commuting and foraging (with potential for Setts to be present in the future).

3.2.2 Bats

A Bat Survey of the buildings concluded that the buildings were not suitable for and did not support a bat roost of any description. (NB. The buildings have since been demolished). Hedgerows and lines of scrub/trees will likely be used as flightlines for bats and the former grassland and ruderal vegetation would have likely provided foraging opportunities for bats. The remaining vegetation currently on site may still provide forage but potentially of a more limited value.

3.2.3 Dormouse

Evidence of Dormouse using the site has been confirmed and is described in the Dormouse Licence Method Statement;

"*The hedge along the boundary between the field and Yard is comprised mainly of hawthorn with hazel and bracken. There is a stand of Japanese knotweed along it near a mature hazel under which ten hazelnuts showing characteristic signs of being opened by dormice were found"* and their use of the site is described thus;

"*The evidence suggests that dormice are using the hedge network and vegetation on and adjacent to the proposed development site for foraging and dispersal. It is likely that they also use areas of thicker and denser vegetation for breeding purposes*."

3.2.4 Amphibians & Reptiles

No targeted reptile survey has been undertaken however reptiles and amphibians are presumed present. The supporting Reptile Method Statement states that *"Following habitat assessment, it was considered that the site has the potential to support reptiles (particularly slow worm (Anguis fragilis), common lizard (Lacerta vivipara) and grass snake (Natrix natrix)). It is possible that adders (Vipera berus) are also present".*

The Method Statement also details suitable habitat/refugia on and adjacent to site, including materials piles, scrub and grassland/tall ruderals.

The debris piles described in the Method Statement are still present, as is much of the boundary scrub. The original grassland paddock no longer exists in its described state, however the resultant pioneering vegetation now covering much of the former grassland will provide forage for reptiles and amphibians, and quite possibly is more suitable for foraging as it appears to be quite species rich, and has much more diversity in terms of micro-habitats, terrain, vegetation density and sward height. Much of the scattered and dense bramble scrub has now gone, however there is still abundant natural cover around the site periphery.

3.2.5 Birds

The PEA states that there is suitable habitat for birds. The remaining peripheral scrub, hedgerows and trees will provide forage, shelter and nesting opportunities for a range of bird species. The former grassland was unlikely to have been particularly rich in insects and seeds, however, the mix of ephemeral/short perennial vegetation over much of the newly "made ground", together with tall ruderals and retained grassland will provide a good source of food for birds.

4. Mitigation, Enhancement, Management & Monitoring Strategy

4.1 Habitats

4.1.1 Hedgerows, trees and scrub

The CEMP acknowledges "*Existing trees and hedgerows are to be protected and retained wherever possible. Trees and hedgerows that are to be retained will be clearly identified and are to be protected from construction activity*".

Although the existing (remaining) hedgerows and some standard trees are to be retained, construction operations close to tree roots will likely cause damage, ultimately risking their integrity and shorten the lifespan of the trees.

Mitigation for this sensitive ecological receptor is covered in the CEMP which states that "*Accordingly, a Tree Protection Zone will be established and maintained around all retained trees, preventing any work taking place without the prior authorisation of the Local Authority's Arboricultural Officer. The alignment of the proposed protective fencing, and all requisite signage, will be in accordance with 'BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations'.*
All contractors and site personnel will be advised of the tree protection zones by way of an induction programme and regular toolbox talks".

Additionally, by retaining and protecting the trees and hedgerows on site, much of the scrub which forms the understorey will be within any designated RPZ.

4.1.2 **Flightlines**

Wildlife species using the scrub vegetation, woodland and the hedgerows along the site boundaries would be deterred from foraging and commuting here by the presence of increased light levels at night. It will therefore be necessary to limit light spill onto these habitats to prevent such an impact, both during construction and operational phase. Any lighting scheme should ensure that 'dark corridors' are retained. (see Bats section for more detail)

Mitigation proposed in the CEMP: "*Night working will be avoided wherever practical, with all construction lighting directed away from the perimeter trees and hedgerows*."

4.1.3 **Invasive Non-native Species**

Japanese Knotweed has been identified on site (as noted in PEA see Appendix 6 for location plan).

The PEA records the presence of Japanese Knotweed on site;

"*A significant number of Japanese knotweed stands are present on the Site and immediately adjacent to it. Their approximate location is shown on Figure 9 below. Several of these stands are well-established (Figure 10), however a number of smaller, younger stands are also present (Figure 11).*"

The CEMP recommends:

"Non-native invasive species such as Japanese knotweed will be removed using an approved method. The legislation surrounding non-native species makes it an offence to cause the plant to spread. Excavation and burning using a recognised system, or stem injection of each stem in the stand with glyphosate will be necessary. Removal or control treatments of non-native plant species must be carried out by a suitably qualified operative. Spraying of vegetation for removal of any other weeds will be carefully controlled and carried out adhering to the pollution prevention guidelines as well as those covering the use of chemicals. All herbicides used on site will be stored in line with current chemical storage guidelines. All ragwort will be removed from the site before its next flowering period, to reduce the spread of this plant to adjacent habitats".

As part of the Ecology section of the CEMP, Point 6. Landscaping, it is clear that there is to be "*no invasive species introduced, no chemical weed-killers, fertilisers etc*". Any Landscaping scheme must take this into account, and planting lists must not contain any species on the Schedule 9 WCA 1981 (as amended).

The CEMP recommends the following treatment method for Japanese Knotweed (at point 6.2);

1. *Prior to works commencing, a management plan to avoid the spread of Japanese knotweed should be prepared and carried out, in accordance with Environment Agency guidelines as previously referenced.*

2. *Depending on the lead-in time for any development works, this may take the form of a variety of methods, including herbicide application, burial and removal off-site. It is recommended that an experienced and reputable Japanese knotweed control company is used to advise further and complete this work.*

Any such treatment plan must take into consideration the requirements for protecting Dormouse, Reptiles/Amphibians and nesting birds and should be agreed with NRW, the contracted on-site Ecologist or LPA ecologist as appropriate.

Since the PEA and CEMP were produced, the site has been cleared and there is no visible sign of Japanese Knotweed were observed during a site walkover in Oct. 2021; the client has confirmed that the site has undergone a rigorous treatment regime for last 4-5 years, undertaken by specialist contractor.

The whole site will continue to be monitored for the presence of Japanese Knotweed: An extensive search will take place in July/August each year from 2022 by a specialist contractor. If Knotweed is found, then a Method Statement for the treatment will be provided and approved by the LPA. Any treatment required will be completed by September of the same year, consistent with best practice. The monitoring will be continued until there are at least 3 consecutive years with no evidence of Japanese Knotweed.

4.2 Species

4.2.1 Badger

Badger setts, if present, could be disturbed or destroyed by heavy machinery.

Whilst no evidence of Badger was recorded in supporting ecological reports, if construction commences significantly after the date of the Badger Survey (6months +), it is requested that a **pre-commencement check for Badger be undertaken by a suitably qualified ecologist**, as the extent and density of any scrub is likely to have increased in the interim period, unless significant management of the site has taken place. The LPA (CCC) will be consulted on its findings and mitigation that may be quired.

The PEA & Badger Survey report recommends that a repeat check of the site for badgers should be undertaken. This will be carried out by suitably experienced ecologist, before site clearance.

1. It is recommended that a re-check of the Site for badger setts is completed immediately prior to construction, in order to ensure no badgers have created setts if at least 6 months has lapsed since the badger survey was completed. Should any evidence of badger setts be found, an appropriate licence may be required in order to proceed with the works without causing an offence.
2. During construction, badger escape routes (also beneficial to other animals such as hedgehog and amphibians) should be installed into any excavations deeper than

around 0.3m that remain uncovered overnight. This may take the form of a sloping plank of wood, or an earth ramp in one area of the excavation.

It may be a requirement that any setts on site will be closed and artificial setts will be provided and positioned outside of the immediate development (NRW to advise).

4.2.2 Amphibians & Reptiles

With regard to Amphibians on site, the PEA recommends;

"Construction works should proceed with caution, and any individual amphibians such as toads found during the works will be carefully removed by on-site staff and placed off-site in nearby suitable habitat, such as rough grassland, scrub or ruderal vegetation."

Prior to any site clearance, the Reptile Receptor Site must be prepared to ensure it is suitable to support Reptiles.

The site currently supports unmanaged neutral grassland with Broadleaf Dock and Creeping Buttercup (2021), with a peripheral belt of Bramble scrub. The sward appears to be of an even height and cover over the site, the vegetation is suitably dense to provide cover for reptiles. However, in order to increase suitability for reptiles, it would benefit from management to create a variety of sward heights, allowing for greater plant species diversity which in turn increases prey abundance for reptiles.

Preparation of Receptor Site:

1. Up to 15% of the sward will be strimmed, following method at point 6. below, in a number of patches across the site. Under ecological supervision, the turf will then be scraped from these patches and used to create hibernacula, as below. Bare ground will then re-vegetate from existing seed bank.

2. Four hibernacula will be created in suitable locations (See Appendix 2), away from any possible disturbance). These will be constructed under the guidance of the on-site ecologist to standard design but will consist of a small pit filled with rocks, logs and covered with turf.

3. The wader scrape will be created under supervision and guidance of the Ecologists, and once natural emergent vegetation has established, will provide additional habitat and prey resource for reptiles and amphibians.

The Reptile Method Statement sets out the requirements for site clearance thus:

1. It is anticipated that reptiles will be present throughout the year, both during the active season and during the hibernation period when they are likely to utilise the various rubble / debris and disused material piles. Therefore, there is a need to clear the site in accordance with a Method Statement to ensure that the works are carried out in such a way as to avoid harm to members of this group (and other species

which could be affected e.g. breeding birds, amphibians) as well as avoiding committing an offence under the Wildlife and Countryside Act 1981 (as amended).

2. Trees and understorey vegetation will be cleared from directly affected areas only e.g. areas to be built on or forming part of any landscaping scheme where they cannot be retained.

3. Trees, understorey and scrub vegetation will be cleared to ground level using chainsaws, brushcutters or specialised low ground pressure plant. Arisings will be raked off and saved to create a number of hibernacula on unaffected land. The exact number of hibernacula created will be determined by the onsite ecologist, dependent on the number of existing hibernacula cleared from the development site (created hibernacula location can be found in Appendix 2), excess material will be taken off site and disposed of appropriately. Please note that there may be conflicts with breeding birds as the vegetation clearance should ideally be undertaken while reptiles are active and not in hibernation (i.e. between April and October inclusive).

4. All ground breaking operations affecting potential or discovered hibernacula (e.g. rubble piles, tree stumps and roots) on site will only be cleared once day time temperatures are consistently over 10°C for a period of at least seven days as otherwise reptiles may be killed or injured as a result of inconsistent (low) temperatures (during the day and night) and low prey availability. Potential hibernacula will only be dismantled by hand unless the supervising ecologist gives the approval for machine dismantling. Hibernacula dismantling will only take place while reptiles are active.

5. Vegetation will be cleared between **September and October** (inclusive) only, to avoid killing and injuring reptiles and ground nesting birds. The orientation of the cutting will be designed to push reptiles out from affected areas into unaffected areas, thereby enabling ground breaking works to commence without having to undertake a full translocation exercise. Full details depicted at Appendix 2.

6. Vegetation will be cut and raked as short as possible, ≤ 30 mm wherever possible, in three phases:
    a. • The first phase will reduce the vegetation height to 75mm;
    b. • the second will reduce it to ≈30 - 50mm; and
    c. • the third phase will reduce the height to as close to ground level as possible, but no higher than 30mm.

    There will be a minimum time delay of 24 hours and a maximum delay of 48 hours between the first and second cuts.

7. Between the initial clearance and any ground breaking work, the vegetation will be maintained as close to bare ground (i.e. ≤30mm) as possible either by spraying or ongoing repeated cutting using brush cutters with knife blades to ensure that there is no potential for reptiles to utilise the site after the initial clearance. The use of tractor towed flails and mowers in the improved agricultural grassland will be

permitted at the discretion of the supervising ecologist. Reptile fencing will not be required as long as the bare ground / short vegetation habitat is maintained. It is to be noted though that the preference is to be able to break ground as quickly as possible following the vegetation removal as this will create bare ground, an unfavourable habitat which it is considered that reptiles will not utilise.

8. If reptiles are observed within the clearance area during the works, a decision on how to deal with them will be made on site in light of the conditions on site at the time and the state of the animals themselves. There are three options for dealing with them:

   o It may be possible to leave the animals alone to find their own way into cover, depending on where they are seen, what they are doing and their apparent activity levels; or

   o Capture, remove from site and take into temporary captivity until such time as they can be released into the receptor site (a vivarium has been prepared in case it is required); or

   o Should conditions allow, capture and translocate the animals to the receptor site (detailed in figure 2) immediately adjacent to the site.

9. Potential hibernacula will only be cleared once daytime temperatures are consistently over 10°C for a period of at least seven days as otherwise reptiles may be killed or injured as a result of inconsistent (low) temperatures (during the day and night) and low prey availability. Potential hibernacula will only be dismantled by hand unless the supervising ecologist / and or LPA ecologist gives the approval for machine dismantling.
10. The vegetation and hibernacula clearance will be supervised by a suitably experienced ecologist. No work areas with the potential for reptiles to be present will be subject of any ground breaking without the implementation of this method statement unless the prior approval of the supervising ecologist and / or the LPA ecologist has been sought and obtained.

    The supervising ecologist will have the facility to determine whether areas can or cannot be cleared and make alterations to the method statement on site based on the prevalent on-site conditions.

    A daily log will be kept, to include the following details:

    1) Personnel and equipment present on site;
    2) Location details of all personnel and equipment
    3) A full log of all operations undertaken, their location, duration and outcome
    4) A log of all reptiles found to include time, species, gender, size, weight, and condition assessment;
    5) A log of any reptiles captured, translocation / other actions and relocation details (time, exact location);
    6) Weather;

All logs will be signed off by the Supervising Ecologist (or accredited deputy); copies of all logs will be submitted to the LPA on a weekly basis until the clearance is completed.

The log can be seen at Appendix 4

4.2.2.1 **Post Development Management**

Post development management of the reptile receptor site will be for a 10-year period and will depend on the state of vegetation; the Reptile Method Statement advised that a suitable grazing regime be put in place.

The vegetation appears to be suitable to graze cattle or sheep, however, the quality of fodder may not be sufficient, therefore the stockman must assess suitability at the time. It is up to the grazier to determine the stocking levels appropriate for the stock to be used; however, a grazing rate of no more than 0.2LU/ha is recommended. Further advice on stocking rates can be gained from organisations such as Natural Resources Wales, Pont Cymru, and the Amphibian and Reptile Trust.

If the site is deemed suitable for grazing, this will follow the advice given in the Reptile Habitat Management Handbook1. Alternatively, a manual cutting regime should be devised, so that the end result of either regime will be a mosaic of habitats to include small areas of short, turf, tall tussocky swards, tall ruderal vegetation, a wader scrape, and scrub.

Once the site is deemed suitable for reptiles by the on-site ecologist (which must be in writing) and prior to any translocation, a management prescription will be agreed which will describe the action to be taken (e.g., strimming), the method, timing and frequency, together with a record of the action taken/result (e.g. 'before and after images'. Any such management is likely to be infrequent (less than annually) but essentially must result in a mosaic of habitats to include small areas of short turf, tall tussocky swards, tall ruderal vegetation, maintenance of a wader scrape and presence of scrub.

4.2.2.2 **Post Development Receptor Site Monitoring scheme**

A monitoring scheme will be required to demonstrate that the receptor site remains suitable for reptiles; a reptile survey for population estimate and habitat suitability (photographic evidence) will be undertaken using standard survey methods and levels of effort as set out in the *Natural England Technical Information Note TIN102 - Reptile mitigation guidelines* and results presented to NRW/LPA Ecologist to be submitted in years 1, 3, 5, 7 and 10; year one being the year following the completion of clearance and initial receptor site preparation.

A description of habitat condition and recommendations as to future management will be reported at the end of Year 3 survey, with subsequent reporting thereafter, following future surveys as appropriate.

The Developer and their Ecologist will provide an annual written report to CCC each November on the pre and 10 yr post construction management of the receptor site with photos evidencing that the work set out in this EMP has been completed and setting out how the grassland has been managed each growing season. It will also set out the results of appropriate monitoring of the receptor site for reptiles.

The hibernacula will be plotted using GIS to their position remains known. All biological records from this site must be sent to the West Wales Biodiversity Information Centre, which will be referenced in the annual monitoring reports.

4.2.3 Dormouse

Evidence of Dormouse using the site has been detailed in the supporting ecological survey reports and subsequent Dormouse Licence Method Statement. NRW have commented on this document (10/4/17) and stipulate the following:

- *" inclusion of a planning condition on any planning permission that prevents the commencement of development works until your Authority has been provided with a licence that has been issued to the applicant by Natural Resources Wales pursuant to Regulation 53 of the Conservation of Habitats and Species Regulations (2010) authorizing the specified activity/development to go ahead."*

- *"the provision and implementation of a Habitat & Landscape Management Plan to the satisfaction of the LPA, which ensures the long-term maintenance and management of the mitigation measures proposed, along with appropriate monitoring to ensure that the measures are successful. To be implemented as agreed."*

4.2.3.1 **Site Clearance Sequence**

The Dormouse Licence Method Statement sets out suitable site clearance methods for vegetation which needs to be removed in order to facilitate the build, all other boundary vegetation is to be retained and enhanced as described for Reptiles and Dormouse:

The hedge and scrub will be removed as follows:

1. There will be a detailed search of both above ground vegetation and ground layers by the supervising ecologist immediately prior to the above ground clearance to check for animals / nests. Animals found will be able to escape to adjacent retained sections of vegetation. In the unlikely event that any dormouse nests are found, they will be placed in a dormouse box positioned in the nearest section of retained vegetation.

2. Immediately following the ecologist's search, clearance will begin at the mid-way point of the hedge to be cleared thereby minimising the distance animals have to travel to escape. Clearance will be carried out using hand tools (chainsaws) only. All clearance operations will be supervised by the named ecologist. Above ground vegetation will be cut to a minimum height of 500mm.

3. Following the clearance of above ground vegetation, the named ecologist will re-check the line of the hedge for any dormice, other small mammals, and reptiles which may be affected by any ground breaking operation.

4. Ground layer vegetation will then be removed under the direct supervision of the named ecologist to check for the presence of any animals, particularly dormice and other small mammals, and reptiles.

5. Ground breaking operations will only be permitted once the hedge and scrub vegetation has been cleared and the named ecologist has given permission to carry on. (Coppicing may only be undertaken between October - May (inclusive)).

6. Ground breaking operations will only be permitted between April and October (inclusive) in order to avoid the hibernation period.

7. This methodology will prevent adverse impacts as a result of the clearance on breeding birds, reptiles and other small mammal species.

4.2.3.2 **Enhancement of existing habitat**

Existing vegetation to be retained on and adjacent to the site will be enhanced by providing a minimum 1m width buffer planting to increase the width of hedges, by way of a double staggered row of mixed native planting (c.100cm between rows and c.30cm between plants, 5 plants per linear meter). Additionally, where hedges are gappy and sparse, the gaps will be subject to infill planting. The new planting will be separated from areas of housing by suitable fencing (e.g. close boarded fencing against gardens; stock net and barbed wire against agricultural fields).

New planting (hedges, scrub and woodland) will, on becoming established / of an appropriate age, be managed by rotational coppicing and / or laying to ensure that a thick and dense understorey and canopy are maintained.

The species mix for widening and infilling, will reflect species in the existing hedge/local area and will contain 50% Hazel, with Hawthorn, Blackthorn, Holly, Field Maple, Guelder Rose, Elder and climbers (see Landscape Plan for full list and spec.).

Each 30m section of hedgerow will have at least 1 standard tree (i.e. left to grow to maturity, not cut as part of the hedge) – these will be Oak, Elder, Field Maple and Crab Apple

4.2.3.4 **New habitat creation**

Habitat creation will take the form of new mixed hedges which screen Open Space and Housing throughout the development site. Additionally, new native woodland will be created. See Appendix 5.

Hedge species will be the same as listed above (see Landscape Plan for spec.), with occasional standard trees within the longer lengths (i.e., not necessarily at plots 46-53 on current layout scheme).

As part of the mitigation for Dormouse, an area of woodland planting (≈0.39ha) will be created to the south of the proposed development site (see Landscape Plan). It will be connected to the proposed development site and wider existing and retained habitat network via an enhanced hedge line to the north of the woodland (southern boundary of Site), enhanced hedgerow along eastern boundary with a newly created hedgerow connecting this to the site's northern boundary.

Coed Cymru advises that for newly created broadleaf woodland, trees should be planted 2.5m apart at a density of 1600/hectare or 648/acre. Climbers such as Honeysuckle and Wild Rose can be planted towards the periphery of the woodland. Trees are typically supplied as bare root (except for Holly which is usually pot grown), and are available as whips, 40-60cm tall but larger trees typically 1.2m-1.5m 1 or 2 years old, can be planted where a more "instant result" is required. The larger the tree stock the quicker the woodland will become established and ecological benefits will be reaped.

Please refer to Appendix 5 for details of the location of proposed habitat creation.

4.2.3.5 **New planting management:**

1. All areas identified for and subject of new and replacement planting and habitat improvement will be managed in accordance with the recommendations contained in Hedgerows a guide to wildlife and management (PTES) and Hedgerow management, dormice and biodiversity (English Nature, Report 454, 2002) i.e. there will be no intensive flailing of hedges or aggressive scrub and woodland management wherever this does not conflict with other regulatory requirements (e.g. highways).

2. For a minimum 10 years following any new planting, the planting will be inspected at regular intervals (e.g. assuming planting dates between October 2020 – March 2021: 1 check per week for the first month; thereafter 2 checks per month for 1 month then 1 check per month until October 2021. Thereafter, vegetation will be checked once per year in the summer (July)). Any and all losses will be replaced as soon as possible and subject to appropriate management to ensure successful establishment;

3. Protective fencing will be required to prevent any possibility of damage until the vegetation is fully established. This will be installed immediately following the new planting;

4. Any and all lighting will be directed away from retained, newly planted and improved habitats, and in particular the wildlife corridors across the site, to reduce light pollution and disturbance to dormice. The use of shields and baffles may be required;

5. All new planting, gapping up etc. implemented as part of this licence application will be allowed to establish itself before management is implemented. The management of hedges will ensure that they are maintained at a minimum winter height of 3m (excluding existing trees) and will be undertaken no more than once every two years (or less frequently wherever possible). Cutting of hedges alongside roads and paths will have to be on an annual basis for highways related health and safety reasons; the side of the hedge which is not facing the road or path will be managed as per non-roadside hedges.

6. Where tractor mounted machinery is required for hedgerow management, the operative will utilise oscillating blade cutters in preference to flails.

4.2.3.6 **Mechanisms for ensuring delivery of mitigation and compensation measures**

1. No work to clear or remove vegetation will be undertaken without the named ecologist being present.

2. All site work will be supervised by the named ecologist. All hand searching for dormouse nests and animals will be undertaken by the named ecologist.

3. All site personnel will be given an ecological site induction by the named ecologist which will detail all matters relating to dormice, ecological issues and this method statement. All those attending will be required to sign an ecological induction record sheet

4.2.3.7 **Mitigation contingencies**

In the unlikely event that any nests are found, nests will be placed in a dormouse box positioned in the nearest section of retained vegetation.

4.2.3.8 **Biosecurity risk assessment**

Japanese knotweed (*Fallopia japonica*) was identified in a number of locations on the proposed development site. Treatment of this species must be undertaken with due consideration to dormice i.e. there will be no wholesale excavation and removal to landfill or encapsulation without first amending the contents of this method statement and must be agreed by both Carmarthenshire County Council and Natural Resources Wales in advance of any such treatment. Chemical treatments must ensure that there is no detrimental impact on dormice; it is therefore advised that any such treatment is undertaken in accordance with principals outlined in the Japanese Knotweed Code of Practice[2] (as amended) (withdrawn July 2016 but not yet replaced) and agreed with both the LPA and NRW in advance.

4.2.3.9 **Post-development site safeguard**

1. **Habitat/site management and maintenance**

The lengths of hedgerow to be removed are on land owned and retained by Dinas Yard Developments Ltd. All matters relating to the planting in mitigation will be undertaken by contractors appointed by Dinas Yard Developments Ltd (or their agent) or a housing developer in the event that the land is sold to such by Dinas Yard Developments Ltd.

In the event that the land is sold to a housing developer, the developer / new owner will be made aware of their responsibilities under this method statement for all mitigation, enhancement and compensation works in respect of dormice. The developer / new owner will be made aware of the **need to obtain an NRW development licence in respect of dormice prior to any works commencing**. It will be reinforced to them that the licence can only be applied for on receipt of a successful detailed / full planning application and the update of this method statement to accompany the development licence application.

Dinas Yard Developments Ltd will be responsible for the management and maintenance of land, retained and enhanced vegetation and new planting until such time as the development site may be sold to a developer or the end of the licence period (whichever is sooner); on any sale of the land, all responsibilities will be transferred to the new owner who will then continue to implement the requirements of this method statement and any dormouse development licence until the end of the licence period. The responsibilities include (but are not limited to) record keeping, financial control and selection of appropriate sub-contractors.

The monitoring of retained and enhanced vegetation and new planting will be delivered in combination by the named ecologist and the appointed landscape sub-contractor and/or tree surveyor.

It is envisaged that on completion of the development, the landscape out with private curtilages of the housing area (i.e. all public open space, roads, kerbs, mitigation land, planting etc.) will be managed by the developer until it is transferred to another relevant body (e.g. private management company) or adopted by the relevant local authority. The relevant organisation will assume the responsibilities for implementing the remaining duties under this method statement and licence.

2. **Population and habitat monitoring**

Monitoring of Dormouse habitat (new and retained planting, protective fencing and Dormouse Boxes) will be undertaken for a period of 10 years, post creation.

It is proposed that 1 tree or post mounted dormouse nest box will be installed per 50m of retained and enhanced hedgerow / new planting boundaries. These will be erected in the January or February winter before monitoring is due to commence.

For boxes in new woodland planting areas, post or tree mounted dormouse nest boxes will be installed at a rate of 1 every 50m 1m inside the boundaries of all new planting areas. All

boxes will be erected ready for use by dormice at the start of the dormouse survey season in the second year after the planting or as soon as the named ecologist determines that the vegetation has become established sufficiently for the habitat to become viable for dormice.

The boxes will be monitored a minimum three times per year (May, July and September) every year for 10 years following installation. (Please note that the LPA and / or NRW may request or specify a shorter or longer term of monitoring).

All protective fencing will be monitored for failures, at least once per year. All failures will be repaired or replaced immediately on discovery of such.

3**. Post-development mitigation contingencies**

It will be the condition of the created, retained and enhanced habitats and their links to other suitable habitats which determines the success of the proposed mitigation. Therefore, the **condition of the created, retained and enhanced habitat will be monitored annually as part of the box monitoring surveys.**

The health of trees will be monitored by a qualified tree surveyor every 2 years.

All planting which fails will be replaced as soon as possible (given seasonal planting constraints).

The management of the hedges and site boundaries will be examined to determine whether alterations / improvements to the proposed management should be made.

Additional planting or protective fencing will be completed as required.

4. **Mechanism for ensuring delivery of post-development works as appropriate**

The proposed post development work will be the responsibility of Dinas Yard Developments Ltd and all successors in title for the duration of the development licence period. Dinas Yard Developments Ltd will ensure that any and all successors in title are aware of the duties and responsibilities of this method statement and development licence and to ensure that any and all successors in title abide by the duties and responsibilities imposed on them by this method statement and development licence.

5. Timetable of works

Proposed activity	Timing	Responsible person / body / notes
Search of hedge by ecologist	TBC (but within parameters outlined above)	Named ecologist
Coppicing of hedge to 500mm	TBC (but within parameters outlined above)	Appointed contractor & named ecologist
Excavation of hedgerow roots and other vegetation	TBC (but within parameters outlined above)	Appointed contractor & named ecologist
Preparation of new planting area (fencing, soil preparation)	TBC (but within parameters outlined above)	Appointed contractor & named ecologist
Planting of new woodland and buffer areas	TBC (but within parameters outlined above)	Appointed contractor & named ecologist
Monitoring of new planting	TBC (but within parameters outlined above)	Appointed landscape contractor/tree surveyor & named ecologist
Erection of pole mounted dormouse boxes	TBC (but within parameters outlined above)	Appointed contractor & named ecologist
Monitoring of dormouse boxes	3 times per year (May, July and September) for 10 years	Named ecologist

4.2.4 Birds

The PEA states that *"Trees and hedgerows on the boundaries of the Site will be retained within the scheme as far as possible, in order to ensure continued provision of bird and bat habitat. There is also an opportunity to improve and strengthen boundary features through additional planting, thus providing additional breeding bird habitat and higher quality foraging and connecting habitat for bats. An appropriate landscaping scheme will therefore be put into place, using native species of local provenance, in order to provide biodiversity net gains in line with planning policy*."

Construction impacts:
Nesting birds will utilise a range of habitats and features across the site including scrub, hedgerow, ground vegetation, discarded/stored materials. Disturbance to or proposed removal of such features may cause death, injury or disturbance to birds, their nests and young.

Mitigation:
The site clearance methodology described above for both Reptiles and Dormouse will also reduce risk to birds; methods include hand searching/clearance of features which have the potential to harbour a range of animals and birds, (features include waste materials/tyres, scrub and hedgerows).

Additionally;

1. Where vegetation removal cannot be avoided, in order to avoid committing an offence under the Wildlife and Countryside Act 1981 (as amended) it will be necessary to programme this to take place outside the bird-breeding season. The bird breeding season is normally taken to be March – August inclusive, with September – February inclusive being the best time for vegetation clearance. Where this is not possible, any vegetation scheduled for removal will be inspected immediately prior to this by an appropriately experienced ecologist and, if breeding birds are found, a buffer area will be put into place and vegetation removal will not proceed until the nest is considered to be no longer active.

2. Building demolition will also take place outside the breeding bird season. Where this cannot be achieved, similar inspections by an appropriately experienced ecologist will be completed, as described above.

Operational impacts:
Future management of retained and created habitat may adversely affect breeding birds.

Mitigation:
Management of such habitats must avoid the bird breeding season (generally March to August inclusive). Depending on management method chosen for Reptile Receptor Site, advice should be sought from the appointed site ecologist in relation to vegetation cutting, particularly in respect of ground nesting birds, which may include species associated with the created scrape.

Enhancement:
The habitat creation in the Reptile Receptor Area, together with hedgerow habitat improvements and newly created woodland area, will also benefit a range of bird species, as well as intended target species.

Further habitat for birds can be delivered through a suitable Landscaping scheme, which will include a variety of species which provide seed/fruit as well as shelter and nesting opportunities. The current Landscaping Plan indicates that new hedging around green spaces will be of Cherry Laurel, which although is not native, does provide dense year-round foliage and berries in the autumn. It will provide early nectar sources for invertebrates, which will in turn benefit birds. Planting of Standard trees is noted as Mountain Ash (*Sorbus aucuparia*) which will provide nectar in early Summer and berries in autumn.

4.2.5 Bats

Construction impacts:
The peripheral scrub and hedgerows around the site boundary may act as a flight-lines, with larger trees having the potential to support roosting bats. Site lighting may affect normal feeding behaviour.

Mitigation:
The PEA states;

"If any semi-mature or mature trees are to be lost or managed as part of the development, further assessment of such trees in relation to bat roost potential will be completed prior to works commencing. This will include ground- based visual inspections of trees, and, if any potential bat roost features are found or cannot be ruled out from the ground, further assessment will be necessary, involving climbing surveys and/or evening emergence/dawn re- entry surveys".

Surveys will be undertaken by an appropriately qualified and licensed ecologist, following best practice guidelines as set out in Bat Conservation Trust's publication "Bat Surveys for Professional Ecologists: Good Practice Guidelines 3rd edition"

Site lighting will be kept to a minimum and be directed away from peripheral vegetation which may act as a flight line.

"No construction works will take place between dusk and dawn, in order to reduce impacts of lighting on foraging/commuting bats during construction. Any lighting scheme for the proposed development will be sympathetic and will take into account the likely presence of foraging bats in the area. For example, by providing dark corridors along retained tree lines, particularly close to the northern boundary/disused railway".

Operational impacts:
Increased light levels from use of street lighting and domestic internal lighting and floodlighting is known to adversely affect the normal behaviour of bats.

Mitigation:
The type of lighting and its placement will be considered on the new buildings to avoid disruption to bats. Any lighting scheme will follow best practice to avoid disturbance of bats and will be designed to maintain dark corridors for bats and other nocturnal animals. Recommendations made in the Lighting and Landscape Scheme will be agreed with NRW and Site Ecologist. No such Lighting scheme was made available at the time of writing.

Further information on bats and lighting can be found on the Bat Conservation Trust website www.bats.org.uk and the latest guidance in association with the Institution of Lighting Professionals can be found at https://www.theilp.org.uk/documents/guidance-note-8-bats-and-artificial-lighting/.

Enhancement:
Both the woodland creation and hedgerow improvements will benefit bats in terms of Flightlines and foraging opportunities. However, further habitat provision can be incorporated into the site by way of installation of bat bricks into the fabric of a all houses.

5. General Implementation & Supervision:

Careful planning and supervision of contractors will seek to ensure that disturbance to habitats which are to be retained, and species of significance (whether protected, of conservation concern, or undesignated), is kept to an absolute minimum. Future site maintenance will also have due regard to the well-being of all habitats, flora and fauna, details of which will be set out in any Landscape Maintenance & Management Plan/Scheme to be agreed.

There will be ecological input at key stages of development; an independent Ecological Clerk of Works (ECoW) will be appointed prior to commencement of construction.

All site personnel will be made familiar with the ecological requirements of the site; The ECoW will deliver initial induction talks to all construction personnel which will ensure that they are made aware of any ecological issues relevant to the site, such as protected species, invasive species, sensitive (and retained) areas of habitat etc, as well as best practice to ensure good animal welfare (such as covering over an pits or trenches at night).

The ECoW will act as a Watching Brief during habitat manipulation and clearance sequences, translocation of trees and any other operation deemed to have the potential to adversely affect wildlife.

Erection of protective fencing e.g. for retained grassland and RPZ will be overseen by the ECoW.

The ECoW will also guide and assist contractors tasked with provision of enhancement features; e.g. installing Dormouse boxes, bird boxes, bat bricks and creation of reptile hibernacula.

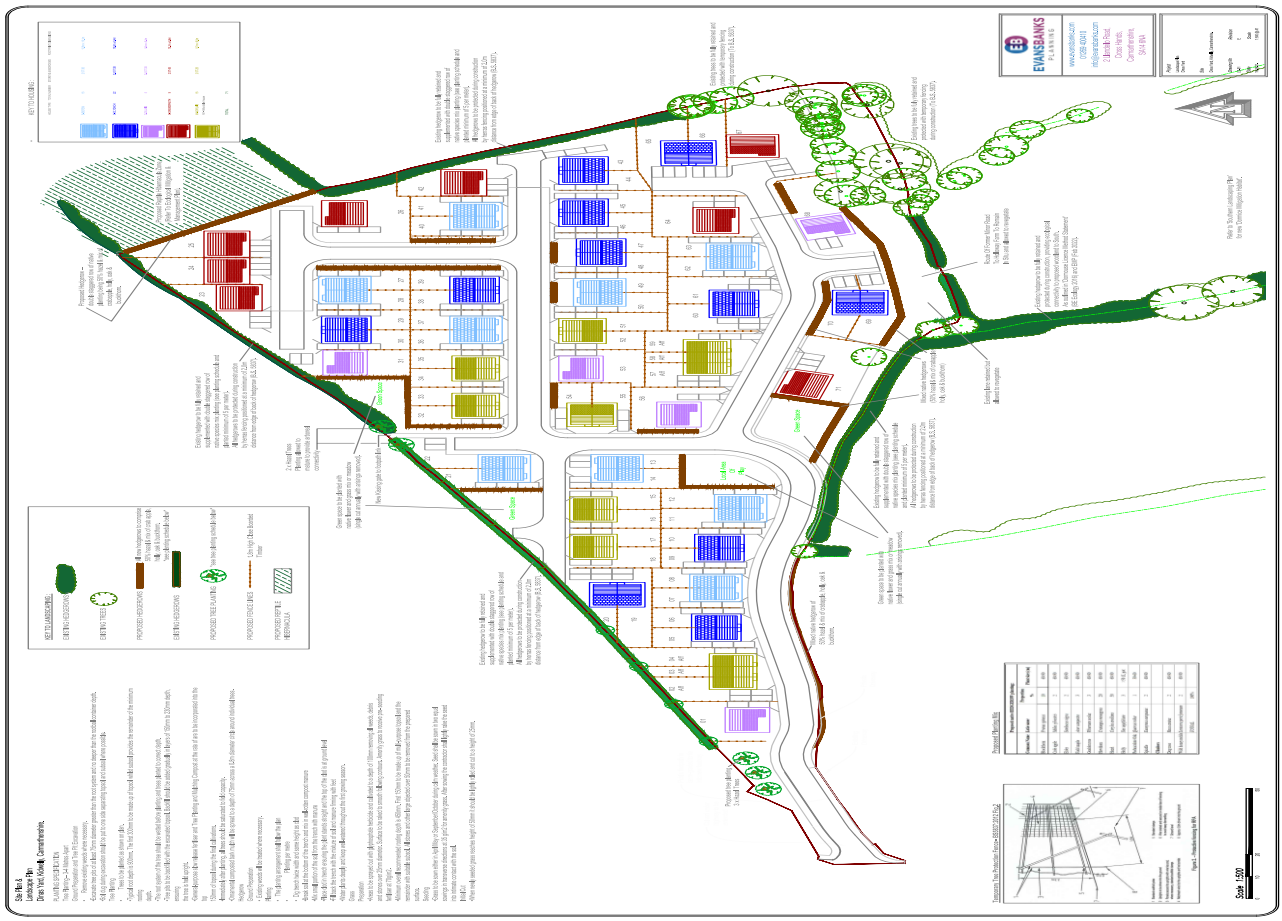
All the recommendations in the EMP and relevant associated documents must be translated into appropriate clauses in works contracts and be specified in appropriate method statements. The ECoW should, where appropriate, approve all documents and plans that may affect important ecological features identified, particularly where there are legal implications, such as the security of protected species and important habitats.

6. REFERENCES:

Coed Cymru: https://coed.cymru/images/user/Tree_Planting__Coed_Cymru_2017.pdf
PTES Dormouse Conservation Handbook 2nd Ed.

APPENDIX 1

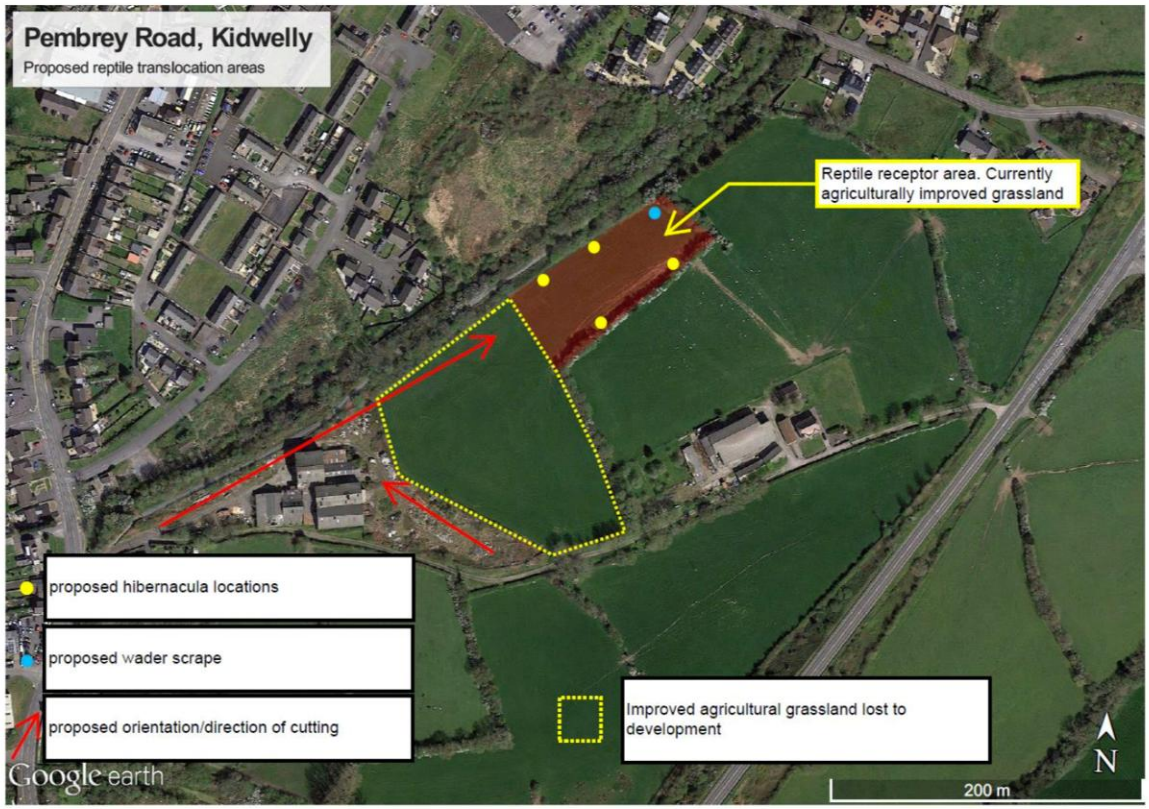
Indicative site layout plan



Current Indicative Site Layout as set out on Landscaping Plan courtesy of Evans Banks Planning Ltd

APPENDIX 2

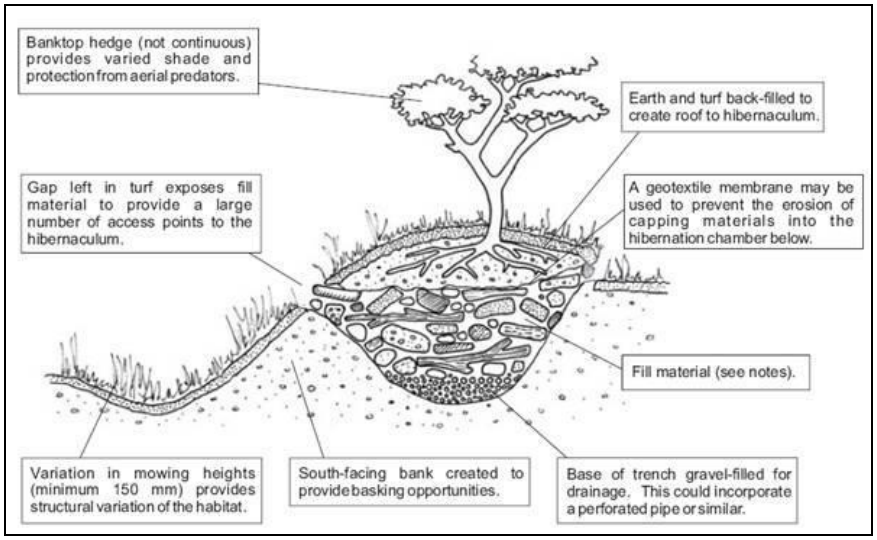
Reptile Habitat Manipulation plan



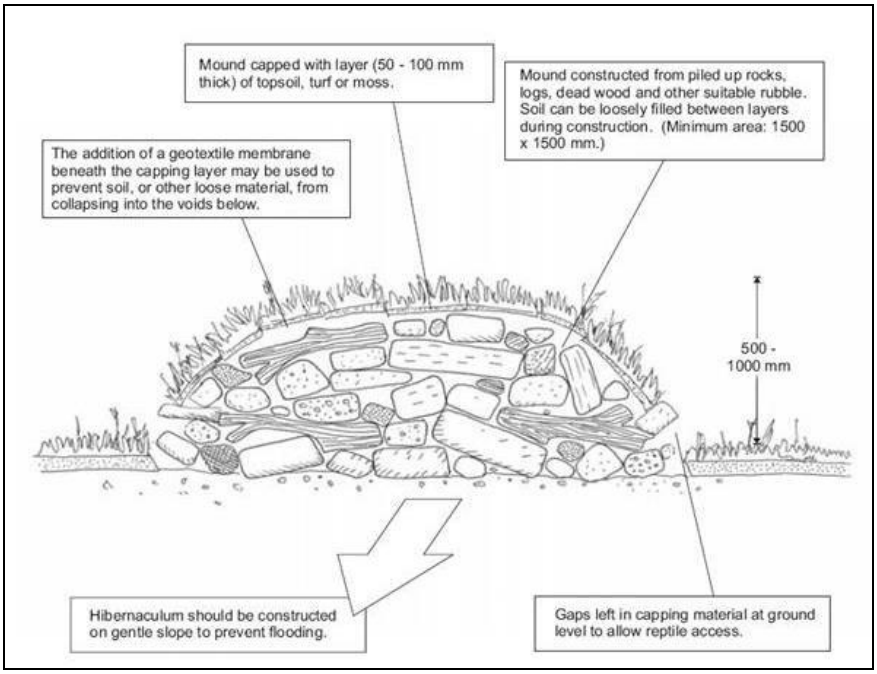
Details of reptile receptor site and vegetation clearance (extract from Reptile Method Statement BE Ecology July 2016)

APPENDIX 3

Details of suitable hibernacula design



The preferred hibernacula design where ground conditions allow



Impermeable / flat ground (where flooding is likely)

APPENDIX 4

Reptile site clearance Log (provided by BE Ecology in Reptile Mitigation Method)

LAND AT PEMBREY ROAD, KIDWELLY, DAILY LOG SHEET

Ecology Daily Log Sheet

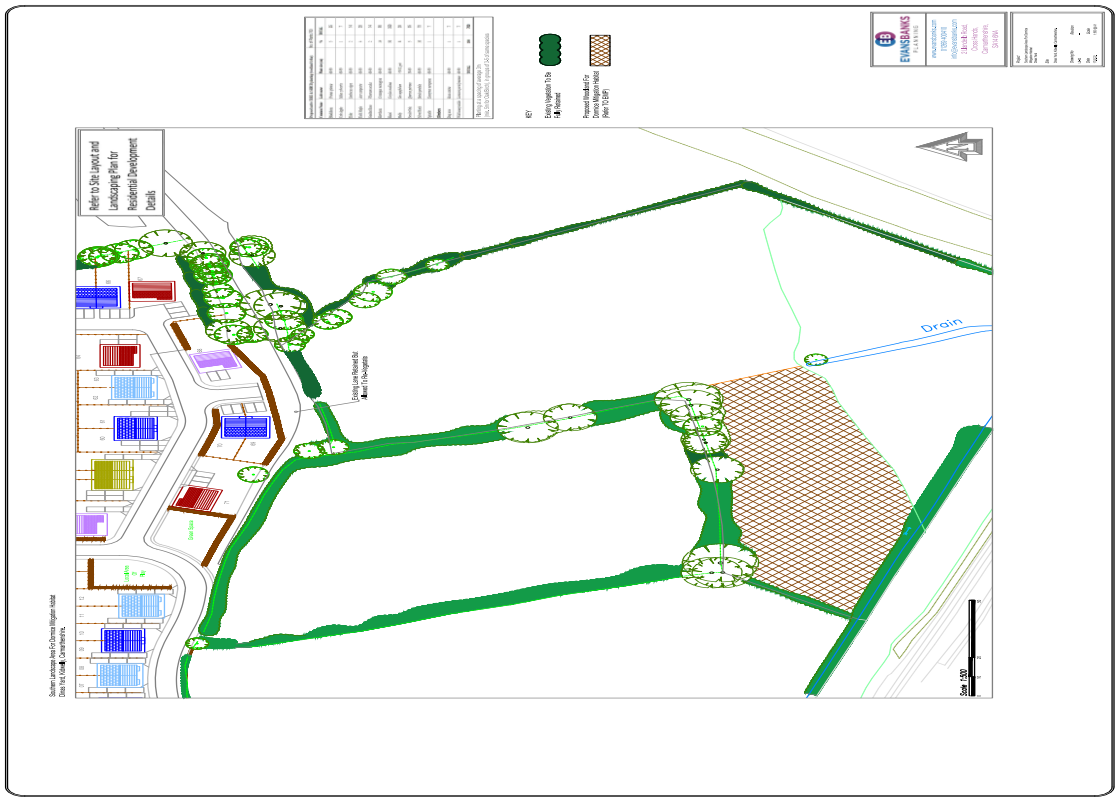
Day		**Date**			
Onsite supervising ecologist					
Weather					
Previous night weather (including lowest temp (°C))					
	AM	**PM**		**AM**	**PM**
Wind direction (average)			**Wind speed**		
Day time cloud cover (average %)			**Precipitation type**		
Temperature (°C)			**Precipitation (mm)**		
Ecologists / ecological assistants on site					

Name	**Time on site**	**Time off site**

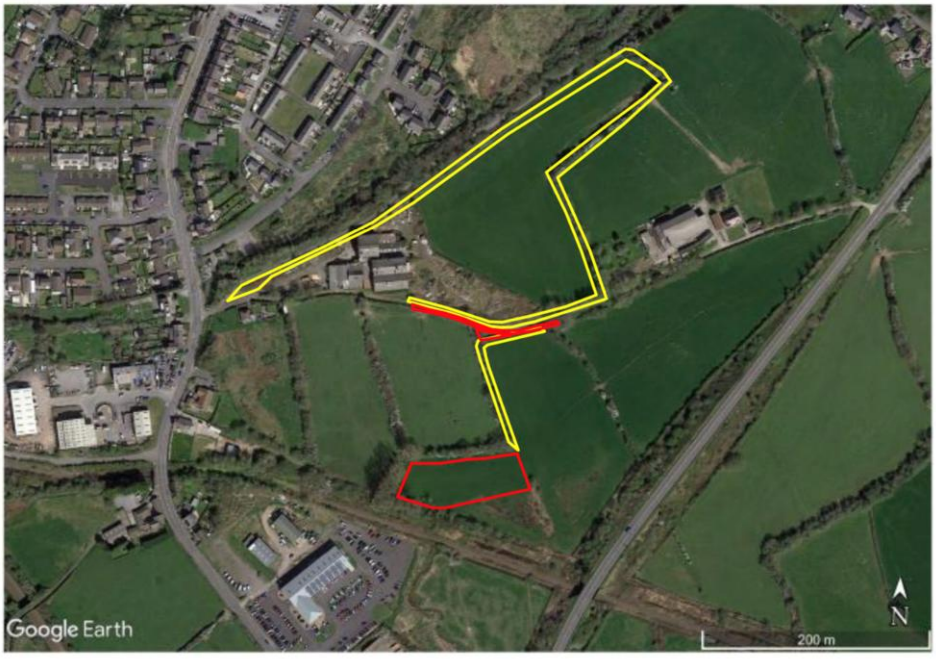
Ecology daily log sheet	Date	
Description of work element (to include plant / machinery used; location; result)	Start time	End time

APPENDIX 5

Dormouse Mitigation Planting Plan



Combined mitigation, enhancement and compensation proposals



Extract from Dormouse Licence Method Statement – BE Ecology
Yellow = Proposed modification of existing habitats - hedge buffer & infill planting
Red = Proposed new broadleaf planting

APPENDIX 6

Approximate Location of Japanese Knotweed Stands

Extract from PEA

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We confirm that in preparing this Report we have exercised reasonable skill and care, taking into account the project objectives, the agreed scope of the work and prevailing site conditions.

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