



MAES MERDDYN, BRYNSIENCYN

PRELIMINARY ECOLOGICAL APPRAISAL

DATE	ECOLOGIST	APPROVED	VERSION	COMMENTS
25/04/2024	Hannah Tucker	Tim Yardley	V1	

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Executive Summary

Site	Brynsiencyn,	OS Grid Reference:	SH 47969 67279
Surveyor(s)	Tim Yardley and Hannah Tucker	Survey Date:	13/03/2024
Type of Survey	Preliminary Ecological Appraisal (PEA)		
Summary of Proposed work	A new residential development of residential units with associated access roads, gardens and public open space.		
Habitats/structures affected	Poor semi-improved grassland, tall ruderal and dense shrub.		
Designated sites affected	The site is not within or adjacent to any statutory or non-statutory designated sites.		
Main results of survey	<ul style="list-style-type: none"> Phase 1 habitats within the development footprint comprised of poor semi-improved grassland, tall ruderal, dense shrub, mixed woodland, and Ephemeral/short perennial. No protected species, or signs of their presence, were found within survey area. Potential for nesting birds within the woodland and shrub. Presence of Great Crested Newts and Reptiles cannot be ruled out. 		
Survey conclusions	<ul style="list-style-type: none"> The development will result in the removal of poor semi-improved grassland, tall ruderal and dense shrub. Habitat creation ids required to mitigate for this. Further survey for reptiles and amphibians (eDNA surveys for Great Crested Newts). With Reasonable Avoidance Measures in place, with particular regard to lighting, no other protected species will be impacted by these proposed works. 		
Reasonable Avoidance Measures and Enhancement	<ul style="list-style-type: none"> Reasonable Avoidance Measures will be implemented to protect bats and nesting birds as well as other species which may occasionally visit the site. Biodiversity enhancements will include woodland creation around the sides of the site, including open areas and wildflower planting, an orchard, and planting of street trees. Bat and bird boxes, creation of hedgehog highways. 		

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1.0 Introduction

- 1.1 Enfys Ecology Limited were commissioned by Williams Homes to undertake a Preliminary Ecological Appraisal (PEA) of land within Brynsiencyn.
- 1.2 The proposed scheme comprises the creation of a new residential development with associated access roads, gardens and public open space.
- 1.3 Enfys Ecology carried out a Preliminary Ecological Appraisal (PEA), which included a phase 1 habitat survey, protected species survey and a desk study examining local ecological records held for the area by Cofnod, the local environmental record centre for North Wales.
- 1.4 The survey was commissioned to determine whether the proposed works would affect protected species and also to gain baseline ecological data on the species and habitats present on the site. The survey will also identify any potential ecological constraints and recommend suitable mitigation and/or compensation strategies and enhancement measures as appropriate.
- 1.5 The PEA was carried out on 13th March 2024. This report is valid for a period of eighteen months from this date in accordance with best practice.

2.0 Site Description

- 2.1 The site is located on the north west of Brynsiencyn, Llanfairpwllgwyngyll with the approximate grid reference of SH 47932 67260 (Figures 2.1 & 2.2). To the east of the site is the village of Brynsiencyn and to the north, west and south is agricultural fields. The fields north to the site are bordered by mature trees and hedgerows which have some connectivity to the further landscape.
- 2.2 The site comprised of grassland which covered the central area with patches of tall vegetation. To the western corner and the north east side dense (impenetrable) shrub of blackthorn, hawthorn and bramble covered most of the area. A small mixed plantation woodland (mainly Leyland cypress) formed along the northern border of the site, this connected up to a public footpath that passed over the northern corner which comprised mostly of lesser celandines. The eastern boundary was residential with back gardens backing onto the site. The southern boundary had the A4080 road adjacent.



FIGURE 2.1. SITE LOCATION. THE APPROXIMATE SITE BOUNDARY IS SHOWN IN RED. BASE IMAGE ©GOOGLE 2024

- 2.3 The wider area comprised mostly agricultural fields on all side of the site. These were bordered with hedgerows and mature trees which provided some connectivity to further landscape. There were a few small scattered woodlands to the east with the closest approx. 270m north-west. The closest water course is Afon Braint which runs approx. 530m north of the site and travels east. A singular small pond was located approx. 475m west, with two larger ponds across the river to the north and west just insude 500m.

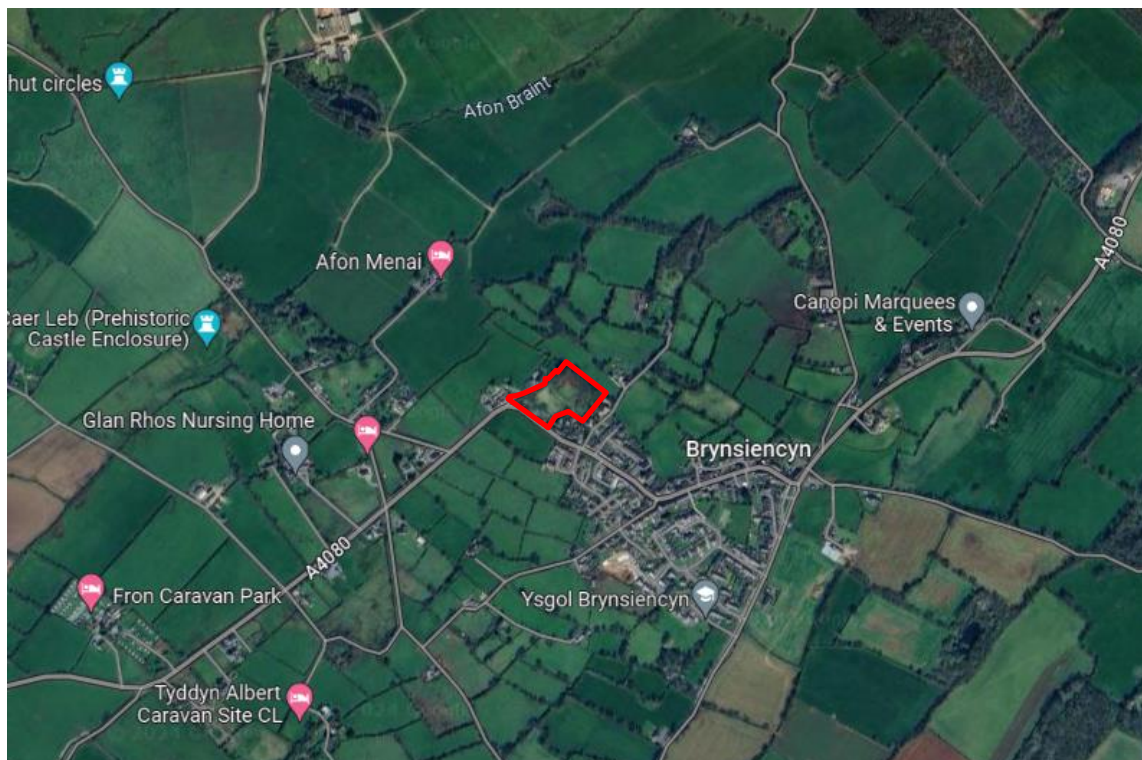


FIGURE 2.2. WIDER SITE LOCATION. THE APPROXIMATE SITE BOUNDARY IS SHOWN IN RED. BASE IMAGE ©GOOGLE 2024

3.0 Methodology

3.1 Desk study

- 3.1.1 The desk study comprised a consultation with Cofnod, the local environmental record centre for North Wales, to determine the presence of statutory and non-statutory sites for nature conservation, and records of protected, notable, or (formerly) Biodiversity Action Plan (BAP) species and habitats from within and around the proposed development within a 1km radius of the site. The records were used to inform the survey and recommendations, and to provide context for evaluating the species and habitats found during the survey. The desk study data can be found in Appendix A, and any relevant species results from the desk study will be referred to in Section 5.4.

3.2 Extended Phase 1 Habitat Survey

- 3.2.1 The survey was conducted by an experienced ecologist walking over the site and all habitat types were visited. Notes were taken on the habitat types present, and their suitability for protected species, and target notes were used to record any habitats or features of particular note, following the standard methodology (JNCC 2010).
- 3.2.2 A search for evidence or potential for protected species was carried out, including amphibians, bats, and reptiles. Evidence of badgers (*Meles meles*) including setts, dung pits, hairs, footprints, and scratching posts or trees was searched for. Trees with suitable features for roosting bats, including knot holes and other crevices, hollow trunks and dense ivy coverage were identified.
- 3.2.3 The extended phase 1 habitat survey of the site was conducted on the 13th March 2024 by Tim Yardley, a suitably experienced professional ecologist and assistant Hannah Tucker. Conditions were wet and overcast with rain for most of the survey.

3.3 Report and Terminology

- 3.3.1 For the purposes of this report, the terms 'site' and 'survey area' refer to the area surveyed on the ground by the ecologist at the client's request, which usually includes the entire area which is subject to the proposed development. 'Search area' is used to refer to the wider 1km radius from which records were sought for the desk study. Where used, 'development area' refers to the area of land directly impacted by the proposed development.
- 3.3.2 English species names are generally used in the text, Latin names generally being given after the first appearance of a species in the report, however these may be repeated where useful for clarity.

3.4 *Limitations*

- 3.4.1 The results of this survey consist only of those species encountered during a short space of time in a single visit in March. Species that use the site infrequently or at different times of the year may not be recorded, and the absence of species from the results of a single survey should not be taken as indicating the species definite absence from the area in question.
- 3.4.2 Due to dense impenetrable shrub in the northern side of the site the north east corner could not be assessed, this may affect the results as evidence for species using this area may have been missed. Vegetation types could be seen and recorded, however it is possible that some plant species were missed.

5.0 Results – Preliminary Ecological Appraisal (PEA)

5.1 *Statutory and Non-Statutory Designated Sites*

Cofnod returned details of no statutory designated sites or non-statutory sites within 1km of the proposed development site.

5.2 *Extended Phase 1 Habitat Survey*

5.2.1 *Habitat Types*

The following phase 1 habitat and feature types were recorded within the site:

- A1.3.2 mixed woodland - plantation
- A2.1 Scrub – dense/continuous
- B2.2 Neutral grassland – semi-improved
- B6 Poor semi-improved grassland
- C3.1 Other tall herb and fern – ruderal
- J1.3 Ephemeral/short perennial
- J5 Hardstanding
- J2.3.1 Hedge with trees – native species rich
- J2.4 Fence
- J2.5 Wall

- 5.2.2 A phase 1 habitat map of the site is provided in Figure 5.1 and a description of the habitats including some species information are provided in Table 5.2 below.

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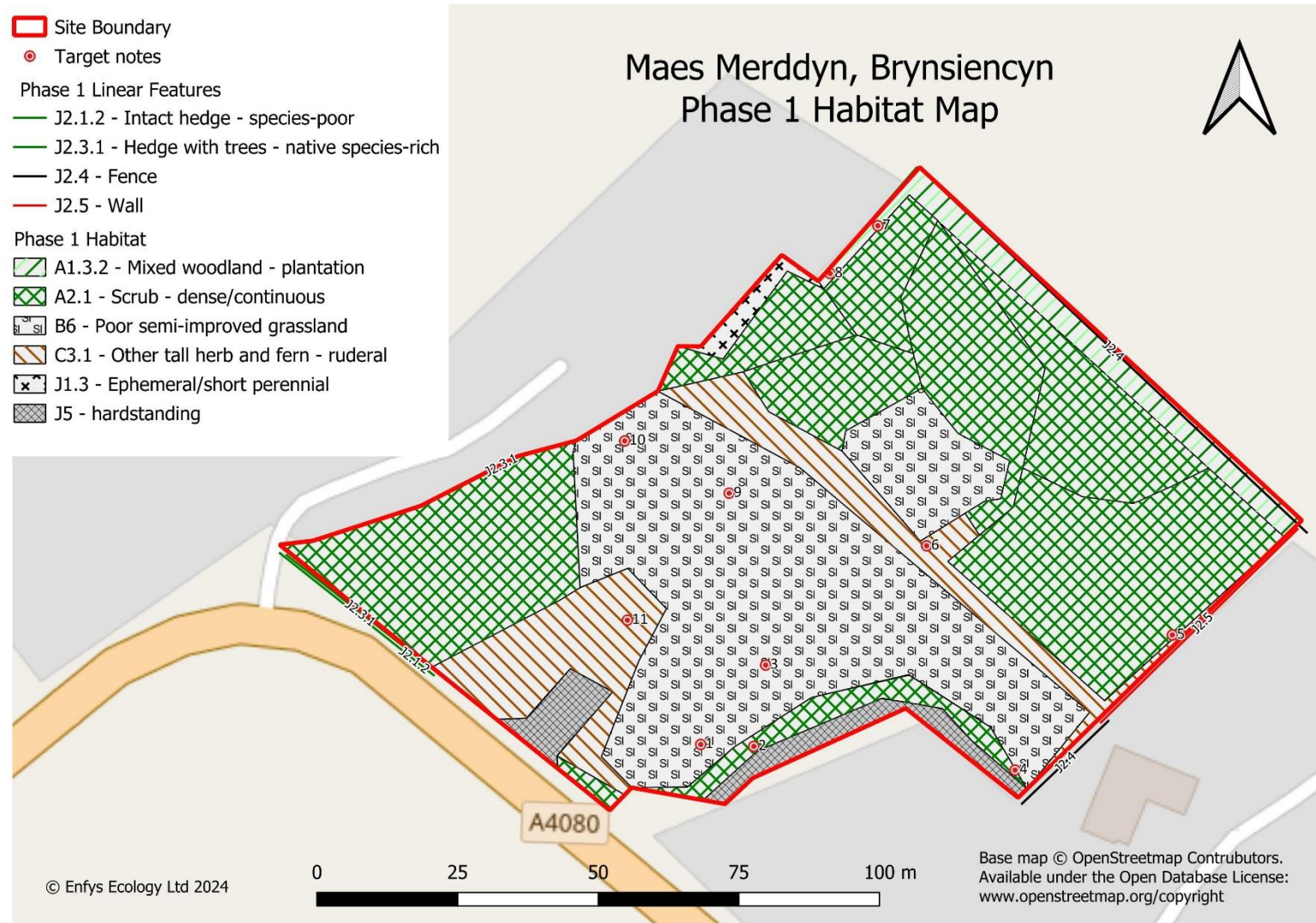




FIGURE 5.1 PHASE 1 HABITAT MAP

TABLE 5.1: TARGET NOTES

Target Note	Description
1	A small area of exposed asphalt in this area, generally unvegetated, may underlie the wider area.
2	A rabbit warren underneath the dense bramble, two burrows were visible.
3	Willow saplings growing in this area in addition to the general blackthorn scrub
4	There are two large dead trees approximately 5m tall, with cut back branches, neither of which had any features suitable for bats.
5	Sycamore tree with no bat features.
6	Rabbit warren which had burrows in the ruderal area and the poor semi-improved grassland.
7	Public footpath behind cypresses, this was dominated by ivy, celandine, arum, and nettles, the ground flora was essentially that of a woodland under the few large trees.
8	Three large sycamores approximately 7m tall, with bat features on western two, as small holes in the knots of the tree. Wood ear fungus was growing on a dead branch in between the sycamores.
9	Telegraph pole, around which are a raised earth bank, roots, bramble, hawthorn lords and ladies, and foxgloves.
10	Pile of rocks which could provide good habitat for reptiles.
11	A Pile of brushwood and large log, also potential reptile habitat.



TABLE 5.2 HABITAT DESCRIPTIONS


Description	Photo	
	Poor semi-Improved Grassland	
<p>The majority of the center of the site was an area of poor semi-improved neutral grassland. The grass was very short, apparently due to dense rabbit grazing from the several warrens on the edges of the site and with numerous very small areas of bare mud. The sward included cock’s foot, yorshire fog, perennial rye, bramble and the tall remioans of docks, rosebay willowherb, hogweed and other umbellifers, with red campion, mouse eared hawkweed, greater plantain, common ragwort, sun spurge, meadow buttercup, germander speedwell, common daisy, yarrow and bittercress.</p> <p>The margins of the area featured lesser celandine, nettles, cleavers, lords and ladies, tutsan, sow thistles, and some himalayan honeysuckle shrubs.</p> <p>There was also a roughly square area of poor semi-improved grassland in the centre of the site surrounded by the the dense scrub. More than half the ground cover here was actually moss, but with grasses, meadow buttercup and celandine, and other similar grassland species dispersed throughout.</p>		

Maes Merddyn, Brynsiencyn : Preliminary Ecological Appraisal

Description	Photo
<i>Tall ruderal</i>	
<p>Tall ruderal vegetation was found near the entrance to the site and along an earth bund (of approximately 1m in height) which lay along the middle of the site from west to east. This bund is a former hedgerow (and possibly clawdd) shown on past satellite imagery of the site.</p> <p>The dominant species was (the standing dead stems of) rosebay willowherb, with some dock, hogweed, bittercress, celandine, thistles, tufted sedge and pond sedge. There was no or a low amount of grasses within the tall ruderal.</p>	
<i>Scrub</i>	
<p>Thick dense shrub covered most of the northern half of the site and a patch in the south west corner. This area was completely dominated by blackthorn shrubs, with very little other vegetation, including the ground flora which was very sparse, mostly bare ground and leaf litter.</p> <p>There was a strip of bramble shrub along the east corner following the driveway which had some daffodils and rosebay willow herb.</p>	

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Description	Photo
<p>Scrub</p>	
<p><i>Mixed woodland - plantation</i></p>	
<p>Across the northern boundary of the site were two parallel lines of trees, together comprising a small mixed palntaiton woodland. This was made up of a line of leyland cyrpresses with some large mature sycamore and ashes to the northern side, directly on top of a small, derelict clawdd forming the northern boundary, with several of the larger trees growing out of it.</p> <p>The majority of the ground flora was sparse ivy or bare ground, with some harts tongue fern. Many rabbit warren entrances were present. One entrance only was potentially badger sized but there was no evidence of badgers, and abundant evidence of rabbits.</p>	

Description	Photo
<p data-bbox="949 193 1355 228"><i>Ephemeral/short perennial</i></p> <p data-bbox="181 284 857 392">An area of short perennials was along a public footpath in the north west corner of the site behind the woodland and shrub.</p> <p data-bbox="181 435 864 544">This was dominated by lesser celandine and ivy with nettles, campion and wood ear fungus growing on the edge.</p> <p data-bbox="181 587 871 695">Three large sycamore trees were on the fence line of the pathway, which had a couple of potential bat features (holes in cut branches).</p> <p data-bbox="181 738 819 847">The ground flora was again best characterised as that of a woodland, with lesser celandine and ivy dominant,</p>	
	

Maes Merddyn, Brynsiencyn : Preliminary Ecological Appraisal

Description	Photo
<i>Boundaries</i>	
<p>Along the southern boundary (outside) was the A4080 road and hardstanding driveways to residential homes on the east and west side of the site coming off the road.</p> <p>The southern and western boundaries comprised of hedgerows, mostly non native cherry laurel, with emergent trees including elder and blackthorns with a ground flora of cleavers, lords and ladies, male fern, daffodils, and some cotoneaster.</p> <p>Along the eastern boundaries was bramble scrub next to a drive way which lead to the back of residential gardens. This was of laurel hedgerow and walls.</p> <p>The northern boundary was the previously described mixed woodland, outside of this boundary was an agricultural field.</p>	

5.3 *Invasive Species*

5.3.1 *Cotoneaster horizontalis* was present in the western part of the site near the boundary hedge.

No other invasive non-native species listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) were recorded within the site. There is a record of Himalayan Balsam 1068m west of the site on the river Afon Braint. Japanese Knotweed has been recorded 496m west, however there has been no records since 1993.

5.4 *Fauna*

5.4.1 No protected species, or signs of their presence, were found within survey area. The survey results for protected species including records within 1km of the site are described in Table 5.4 below.

TABLE 5.4 RESULTS OF PROTECTED SPECIES SURVEY

Species	Presence/ Evidence of presence	Suitability of habitat	Nearest record to site within last 20 years
Amphibians – Great crested newts (GCN)	None	The site provides suitable habitat for amphibians for foraging and commuting. There are no ponds within the site and so amphibians are unlikely to be resident, however there are three ponds within a 500m radius of the site with the closest approx. 340m north. Common amphibians should be assumed to be present on site. The suitability for Great crested newts (GCN) in these ponds is unknown. The possibility that GCN may be using the sites, cannot be discounted, however as there have been no records and there are no ponds within the site it is unlikely GCN will be present.	There are no recent records of GCN. There were three records of common toad, with the most recent in 2021, 707m south-west from the site. Three records of palmate newt the most recent in 2021 which was 707m south west from site.
Badger	None	The site is suitable for badgers and they may forage in the area. No evidence of badgers, including setts, latrines or snuffle holes were found during the survey.	There were no records of badgers within 1km of the site.

Reptiles	None	<p>The site has some good quality habitat for reptiles in the open, south and western grassland, and the fringes of the scrub. Most of the site is too denselt vegetated scrub or woodland, but the grassland area is very suitable. There rubble piles are potential hibernation sites for reptiles.</p> <p>See target note 10 which shows potential basking and rest areas under, on and between rocks, that were lying loose and exposed on the ground. There were suitable ofraging areas within the shrub and grassland.</p>	<p>There are no recent records of reptiles from within 1km of the site.</p>
Bats	None	<p>The site provided good quality habitat for foraging and commuting bats with the small woodland. The wider area had some connectivity along the trees and hedge line were bat could commute past.</p> <p>The site had a couple of big trees in the northern corner which had some bat features, however these trees will not be effected by the works.</p>	<p>There are two recent bat records, with the closest recent record being a pipistrelle bat 755m south of the site.</p>
Birds	None	<p>The entire site, including the woodland and areas of dense shrub would be suitable for bird nesting.</p> <p>None of the Schedule I birds recorded over 1km of the site would be likely to be nesting on the site or subject to significant disturbance from the work.</p>	<p>There are 206 recent records of 192 species of birds within a 1km radius of the site.</p> <p>Records include nine Schedule 1 species, the closest being red kite within 403m of the site.</p>

Otter and water voles	None	<p>The site did not provide any suitable habitat for otters or water vole.</p> <p>The nearest suitable water course was the River Afon Braint, approximately 530m to the north of the site.</p>	<p>There are three records between 2019-2021 of otter 444m west of the site.</p> <p>There were no records of water voles within a 1km radius of the site.</p>
Hedgehog	None	<p>The woodland and the dense shrub provide suitable foraging and hibernation habitat for hedgehogs.</p>	<p>There are 3 recent hedgehog records from within 1km of the site, with the closest 231m south in 2021.</p>

6.0 Discussion and Conclusions

- 6.1 The proposed works comprise the development to create a new residential development of 28 units, including 19 affordable units, with associated access roads, gardens and public open space.
- 6.2 *Designated Sites*
No statutory or non-statutory designated sites are within or adjacent to the proposed development area and so will not be affected by the proposed scheme.
- 6.3 *Habitats and Flora*
- 6.3.1 The development will result in the loss of (most of) an area of poor semi-improved grassland, ruderal and dense shrub. None of the species recorded during the survey are protected by the Wildlife and Countryside Act 1981 (as amended), Section 7 of the Environment (Wales) Act, 2016. In addition, no nationally or locally rare species were recorded.
- 6.3.2 *Cotoneaster horizontalis* was recorded in a single location close to the western boundary. Other invasive species listed under Schedule 9 of the Wildlife and Countryside Act 1981 were recorded during the survey. This plant will be removed as part of the works.
- 6.4 *Nesting Birds*
- 6.4.1 The woodland, dense shrub and tall ruderal habitat have foraging and nesting potential for bird. essentially all the vegetation on site should be considered potential nesting bird habitat, and thus the clearance of vegetation will entail the loss of bird habitat. Reasonable Avoidance Measures (RAMs) will be necessary in order to avoid the destruction of bird nests and compensation and enhancement measures will be required to replace the loss of bird habitat. Recommendations for avoiding disturbance to nesting birds and suitable enhancements have been provided in Section 7. and should be followed throughout the works.
- 6.5 *Amphibians*
- 6.5.1 The entire site is suitable for common amphibian foraging (though not breeding as there is no open water), and so these animals must be assumed to be present on site. Therefore Reasonable Avoidance Measures (RAMs) should be followed at all times during the works to minimise any risk to these animals. RAMs provided in Section 7.3 must be followed to reduce the risk of harm if an amphibian or reptile were to enter the site during the construction phase of the development.
- 6.5.2 There were three ponds within 500m which could provide breeding opportunities for Great Crested Newt (GCN) and common amphibians with the closest approx. 340m north. There are no records for GCN within a 1km radius and so the presence of this species is considered

unlikely, however as there are ponds within 500m and the species is known from Newborough and southern Anglesey the presence of GCN cannot be ruled out.

Therefore further survey work is required in order to address this; it is recommended that the three nearby ponds are sampled for eDNA if access can be arranged.

If evidence of GCN is not found, they are likely to be absent from the site, and works can proceed under suitable RAMS, If at any point a GCN is found on site works will have to stop and a licence must be obtained from NRW before works can proceed. This licence may include further mitigation and enhancement measures.

6.6 *Reptiles*

6.6.1 Parts of the open, southwestern grassland part of the site is suitable for reptiles, and the area includes several piles of rubble and brushwood which provide potential hibernacula and refugia. However, there are no records of reptiles in the wider area, and the site is quite isolated from any other suitable reptile habitat, being surrounded by agricultural grassland and dense scrub. The site has probably not been ideal habitat for reptiles for long, appearing to be a pasture grassland in historical satellite imagery from 2018, however by 2021 the site appears derelict and is starting to scrub over. Due to this it is considered unlikely but possible that reptiles are present on site. The bund across the centre of the site may be an old clawdd with opportunities for reptiles.

6.6.2 As the habitat is suitable, the presence of reptiles cannot be discounted and so measures must be implemented to prevent causing any harm should they be on site. As a precaution, It is therefore recommended that a reptile survey is carried out in order to determine if reptiles are present. If none are found, works can proceed without hindrance with some certainty. If reptiles are present further mitigation will be required. This will be specified by the ecologist following the surveys, but our recommended solution would be to relocate the reptiles into the ecological enhancement area which is to be retained around the edges of the site (See section 8.) This could be done by directionally clearing the site by strimming, having prepared the receptor areas in advance. These include several areas of suitable habitat, primarily around soakaways planted with wildflowers, and woodland edge habitat. The rubble piles could be relocated to provide hibernacula. In the highly unlikely event that a large population is present then it may be necessary to translocate them off site, and a plan must then be devised to do this.

6.6.3 All of the rubble and brushwood on site must be cleared by hand lifting (unless impossible) and removed from site prior to any works. This must be done during the period when reptiles are active in April- October, in order to avoid disturbing hibernating animals. The grassland area should then be directionally cleared by strimming, first to 10cm to avoid harming any animals, followed by a further cut to ground level. This removes the cover available to any animals on site, causing them to leave the area.

6.6.4 RAMs must also be put in place similar to amphibians, suitable RAMs are provided in section 7. If at any point a reptile is discovered on site all works must stop and an ecologist must be called. The ecologist will advise on further mitigation which may be required.

6.7 *Badger*

There were no badger setts or evidence of badgers within the site, and there were no records of badger within 1km radius of the site. The site is suitable for foraging and sett building; the north eastern corner may have been suitable for a sett, however this could not be accessed due to dense blackthorn shrub. Badgers may well use the site, but it is considered very unlikely that a sett is present due to the absence of evidence of this species. Therefore there are no restrictions on the works. If at any point a badger or sett is discovered all work must stop and an ecologist must be contacted. It is likely that a licence would be required for the works. As badgers may use the site at night general RAMs will be followed at all times during the works to minimise any risk or disturbance to potential badgers and other wildlife entering the site.

6.8 *Hedgehog*

Hedgehogs are listed under Section 7 of the Environmental (Wales) Act 2016. The site provides suitable foraging habitat for hedgehogs within the woodland and shrub. There are three records of hedgehog within 1km of the site, none of these were within the area and no evidence was found. As hedgehogs may use the site general RAMs will be followed at all times during the works to minimise any risk or disturbance to potential hedgehogs and other wildlife entering the site.

6.9 *Bats*

6.9.1 The woodland in the north of the site provide foraging and commuting potential for bats. Two of the big sycamore trees in the northern corner had some suitable features for bats to roost. There is two records of bats within 1km radius of the site and bats may use the site to commute and forage, however the works will not affect roosts as the trees will be left in place. Therefore no further survey work is recommended.

6.9.2 There will be an increase in lighting levels across the site during the construction phase and also from the development from any external lighting used and from light spillage from internal lighting from within the properties. This increase in light, may deter or disturb bats from commuting across the site to areas of suitable habitat beyond so lighting during the works and in the final design of the site will be designed to limit light levels. RAMs for during the construction phase and lighting guidance, to reduce the impact to bats, is detailed in Section 7.2.

6.10 *Other species*

There was no suitable habitat within the site boundary or in areas immediately adjacent to the site, for otters to build a holt, or to layup or for water vole. The proposed works will not disturb otters or water vole or remove any potential foraging habitat.

7.0 Reasonable Avoidance Measures (RAMs)

7.1 *Nesting birds*

- 7.1.1 The removal of any vegetation should ideally take place outside the bird breeding season, (March to September inclusive). If it proves necessary to work during the breeding season then a survey must be carried out immediately prior to works starting (no more than 48 hours beforehand) to ensure that no active nests will be affected. If active nests are found then work must be delayed until all chicks have fledged.

7.2 *Bats - Lighting*

- 7.2.1 ILP (2023) conclude that for bats, artificial lighting at night (ALAN) is thought to increase the chances of predation by avian predators (such as owls and hawks) and in lit areas, bats are known to modify their behaviour, potentially in response to this threat. Illuminating a bat roost can cause disturbance and this may result in the bats deserting the roost, or even becoming entombed within it. Lighting would therefore be considered an obstruction under the legislation protecting bats and their roosts. In addition, artificial lighting can also affect the feeding behaviour of bats.
- 7.2.2 Ecological and lighting design advice should be sought right at the start of a project whenever lighting is being considered, in advance of any lighting design or fixing of scheme layout.
- 7.2.3 Key messages from the ILP (2023) 'Bats and Artificial Lighting at Night' guidance include:
- The ecological mitigation hierarchy applies to lighting design: impacts to biodiversity should be avoided in the first instance through design and where this has been clearly demonstrated not to be possible, appropriate mitigation needs to be put in place. Compensation is the least desirable option, so all other avenues should first be explored and ruled out. In parallel, opportunities to design lighting betterment for biodiversity should be sought wherever possible.
 - It is important to integrate avoidance measures into developmental design, by retaining ecologically functional 'dark corridors' within schemes wherever feasible, and in preference to seeking lighting mitigation strategies. Consideration should be given to the lighting effect of a scheme on Key Habitat and Supporting Habitat areas for bats, as well as commuting routes.
 - It is important to minimise Artificial Lighting At Night (ALAN) close to vegetation, particularly for slower-flying bat species.
 - Dense vegetation should be included in urban landscapes to protect against ALAN for open-space foraging bats in city landscapes, and provide potential longer-term roosting opportunities.

- ALAN has been shown to be particularly harmful along river corridors, near woodland edges and hedgerows.
- Bats have considerable sensitivity to very low light levels and distances from light sources, and there is a need to maintain or reduce existing light levels in the environment.
- Careful choices would need to be made about the type of lighting chosen for a scheme, and this should be designed through a multi-disciplinary design approach. Whilst Part Night Lighting (PNL) schemes and the installation of LED lights may have energy-saving benefits, they can result in an increase in light intensity, impacting on bat behaviours, and the lighting design for each site should be developed using information from bat surveys, and pre-development light level data.

7.2.4 After avoiding, wherever possible, the potential impacts of Artificial Lighting At Night (ALAN) through scheme designs, if further mitigation measures are required in the form of lighting controls, ILP (2023) recommend that a lighting professional helps to select those light sources, lamps, LEDs and their fittings which are most appropriate for the project. To assist with the decision-making process, ILP (2023) suggest that the following are considered when choosing luminaires:

- 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 et al, 2012).
- Internal luminaires can be recessed (as opposed to using a pendant fitting) 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.
- 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 (2021) 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.

7.3 *General Site*

7.3.1 Suitable RAMs will be implemented to reduce the potential impact to species that may be found on site or passing through the site. All measures in this section should be implemented as appropriate.

7.3.2 *Reasonable Avoidance Measures*

The following measures should be implemented at all times during the works:

- Working areas should be kept to the minimum required.
- Works should be avoided within 1 hour of dawn and dusk where possible to avoid disturbance to nocturnal animals. If works during this time are needed, all lighting should be directional and directed away from boundary edges and any surrounding habitat.
- Storage of fuel must follow best practice. Potential pollutants should be restricted to site compounds and hardstanding areas.

- Should it be necessary to have any excavation left open overnight a suitable ramp (such as a plank or branch) must be provided to allow badgers, and other animals to escape the pit. Ramps could be created by grading the slope at the edges or using scaffold boards.
- All materials brought onto site are to be stored on hard standing. Materials will be stored on raised pallets or bagged, to prevent amphibians (or other wildlife) from taking refuge beneath them.
- Any terrestrial mammals seen must be allowed to leave the area on their own. If this is not possible e.g. the animal is injured or trapped then an ecologist must be called.
- If at any point in the works an amphibian or reptile is found within the works area all works in the vicinity of the sighting must immediately cease. Common amphibians should be moved from the working area by site workers (wearing gloves) and placed in a nearby hedgerow. Reptiles will usually retreat to a safe area of their own accord. If a reptile is found then an ecologist must be called, who will advise on further measures.
- Any terrestrial mammals seen must be allowed to leave the area on their own. If this is not possible e.g. the animal is injured or trapped then an ecologist must be called.
- As a precaution, areas of dense brushwood or shrubs should be searched by hand before removal in order to check for hedgehogs or other protected species. If hedgehogs or other protected species are found, work should stop and they should be allowed to leave the area. If this is not possible, an ecologist should be contacted for assistance.

8.0 Enhancement

8.1 Policy and Requirements

- 8.1.1 Planning Policy Wales (PPW) and the Welsh Government state that ‘development should not cause any significant loss of habitats or populations of species, locally or nationally and **must** provide a net benefit for biodiversity’ in accordance with Section 6 Duty of the Environment (Wales) Act 2016* (See below). Mitigation, compensation, and enhancement measures will be put in place and are detailed below.

***Section 6 – Biodiversity and resilience of ecosystems duty**

Section 6 under Part 1 of the Environment (Wales) Act 2016 introduced an enhanced biodiversity and resilience of ecosystems duty (the S6 duty) for public authorities in the exercise of functions in relation to Wales.

6. Biodiversity and resilience of ecosystems duty

(1) A public authority must seek to maintain and enhance biodiversity in the exercise of functions in relation to Wales, and in so doing promote the resilience of ecosystems, so far as consistent with the proper exercise of those functions.

- 8.1.2 Furthermore, Planning Policy Wales edition 12 requires local authorities to produce Green Infrastructure Assessments which should be used to develop a robust approach to maintaining and enhancing biodiversity, increasing ecosystem resilience and the multiple benefits obtained from nature, and should identify key strategic opportunities where the protection, retention, restoration, creation and connection of green features and functions would deliver the most significant benefits.
- 8.1.3 For development projects, PPW 12 confirms that: “A green infrastructure statement should be submitted with all planning applications. This will be proportionate to the scale and nature of the development proposed and will describe how green infrastructure has been incorporated into the proposal”. The green infrastructure statement must also be used for demonstrating how the stepwise approach (Paragraph 6.4.15) has been applied. 7.4.4
- 8.1.4 Development proposals should take GI into consideration in order to avoid negative impacts on habitats and species, and seek ways to maintain and enhance biodiversity. Impacts on habitats and species should be treated in a step-wise manner (PPW 12, paragraph 6.4.15), by seeking to:
- **Avoid** damage to biodiversity in its widest sense by maintaining the largest possible area of existing habitat supporting biodiversity and functioning ecosystems, particularly Section 7 habitats and species where present, through careful development design and consideration of long-term maintenance and management and ensuring that retained habitats continue to be well connected to adjacent habitats to provide connectivity for key species.
 - **Mitigate or restore** by identifying measures to address the specific negative effects by repairing damaged habitats and disturbed species. The measures should seek to

restore in excess of like for like, accounting for disturbance and time lags for the recovery of habitat and species, and in every case, mitigation or restoration measures should seek to build ecosystem resilience within the site and where possible the wider area.

- As a last resort offsite **compensation** for unavoidable damage must be provided. This must be of significant magnitude to fully compensate for any loss.
- All development must **deliver a net benefit** for biodiversity and ecosystem resilience from the baseline state (proportionate to the scale and nature of the development proposed).

8.2 In order to compensate for the loss of habitats within the site, and provide suitable enhancement for biodiversity, the scheme will include an area set aside for biodiversity enhancement within the site. The area will also include green play spaces and incorporates drainage features along with habitat creation, it has been designed in consultation with the project ecologist (along with landscape architects, drainage engineers and other specialists) throughout the design process. This section summarises and provides ecological context for the proposals, For full details of the proposed scheme refer to the landscape plans and green infrastructure statement.

8.3 *Habitat creation – Ecological mitigation area*

8.3.1 A portion of the site will be set aside for ecological mitigation, comprising wide areas along the northern and western site boundaries, the extreme western corner, and a strip along the eastern boundary from the northeast corner. For a full pan of the site refer to the site landscape plan.

8.3.2 This positions the habitat created in the best position for connectivity with the surrounding area via hedgerows to the north and northeast.

8.3.3 All of the preexisting large mature broadleaved trees, hedgerows, and the clawdd on the northern boundary will be retained, as valuable ecological features. Some areas of the existing blackthorn scrub will also be retained where it overlaps with this area, to provide some continuity and habitat for invertebrates using this species. The existing cypresses will be removed; these are of relatively limited ecological value, and their removal will open up the area to allow space and light for habitat creation, and more space for the existing trees.

8.3.4 The most valuable habitat which will be lost is the relatively large area of contiguous scrub in the centre of the site. The enhancement area will therefore be planted with native trees including Maple, Birch, Hazel, Oak, Plum, Rowan and grey willow in order to create a woodland strip enveloping the site. This will develop into a small but useful woodland habitat in Southern Anglesey, one of the least wooded areas of the Uk.

The woodland will also provide shelter for the development, and incorporates children's play spaces and a pathway linking up to an established footpath. The enhancement area also

includes a small orchard, fruit trees will provide some enhanced foraging for Badgers and other animals.

8.3.5 Several areas within the area are set aside for drainage soakaways. However, these will also serve to form small clearings within the woodland providing woodland edges, the immediate drainage areas will feature ground cover planting including moor grass (*Molinia caerulea*) and stonecrops, while around the trees and clearings will be sown with a native, shade tolerant woodland wildflower mix. In the areas of tree planting in the north around the existing trees the existing woodland ground flora will be retained. The open areas will also be suitable habitat for reptiles and amphibians, and can be further enhanced with hibernacula and or habitat piles.

8.3.6 There will also be significant planting of native trees as street trees within the development section of the site, to further increase the tree cover of the area.

8.3.6 The overall effect will be to envelop three sides of the site with a strip of woodland (and some retained scrub), creating a similar area to the existing scrub of a much more diverse habitat with multiple native species, and much more heterogeneity of microhabitats than the previous dense blackthorn, and so useable by more species, once it has matured. The woodland will also be enhanced by removal of the cypresses and planting of a diverse wildflower ground layer and opening out the canopy (Previously continuous scrub) awhile retaining the present large trees and other valuable features. There is relatively little woodland in the open fields of Anglesey. The area also enhances public access to natural spaces by incorporating play areas, an orchard, and a footpath through the woods to the development.

8.4 *Fauna*

8.4.1 Bat boxes should be incorporated into the site to provide suitable roosting features for bats. These should ideally be in-built into the new houses, as these are long lasting and require no maintenance.

8.4.2 The boxes will be at least 4m above the ground and be placed on elevations facing preferably south, south-east and south-west. The positions of these will be agreed with an experienced ecologist and must be placed where there will be the least likely disturbance from light spill, windows doors and patios. Preferred locations of the bat boxes will be marked up on a plan prior to submission.

8.4.3 *Birds*

To enhance the site for birds, at least ten bird boxes should be incorporated into the site, these should be both inbuilt into the houses, and can be mounted on trees within the enhancement areas. Boxes will include:

- Boxes with a 32mm entrance (sparrow boxes)
- for smaller birds (25-28mm)
- 45mm opening (starling box)

8.4.4 *Swift Boxes*

The development is also very suitable as a location for swifts, a species which has been in steady decline in the UK, but is found in the local area¹. It is highly recommended that several colony boxes for swifts are mounted on the exterior of some of the buildings.

Swift boxes should be as close to the apex of the gable end as possible, and grouped together (situated 60 – 100cm apart) as swifts prefer to nest in colonies; preferably not on a south facing elevations as the boxes can get too warm, unless white boxes (as recommended) are used so they do not absorb too much heat. If single cavity boxes are used they will need to be erected in groups of four. The placement of these boxes has been suggested on the gable ends of mostly non-south facing elevations avoiding passageways between buildings where there can be high winds. Other bird species will also use swift boxes, including starlings, sparrow and tit species; other boxes will be provided to try to reduce this, but if not used by swifts these boxes may provide opportunities for other birds.

- 8.4.5 As hedgehogs are known to be present in the area, a 'hedgehog highway' comprising a 13 x 13cm (5 x 5") square hole at the bottom of every fence or gravel board will be created. This will ensure they can continue to move through the area to forage but is too small for most pets.

8.5 *Management*

Ongoing management of the site will be carried out by the housing association taking on the site under an agreement. It is highly recommended that a suitable management plan is produced for the woodland within the site. This could be provided by an appropriate ecologist or the Landscape architect, and should include aims and targets for the successful management of the site, and measures for periodic review and updating of the plan at intervals, typically 5 years.

¹ Pers. Communication with the North Wales Wildlife Trust

9.0 Summary of Recommended Further Work

9.1 Table 8.1 below contains a Summary of recommended further work, with timings and the conditions under which surveys are required. N.B. “Pre-construction” means prior to the works phase beginning on site, whereas “Immediately prior to clearance” means during the works, but prior (ideally within 24 hrs) to that particular operation (e.g. tree felling) beginning.

Condition	Work Stage	Species	Surveys	Location	When possible
If vegetation clearance takes place in March – September	Immediately prior to clearance, whenever this occurs	Nesting Birds	Nesting Bird Surveys	Any scrub, tree, or tall vegetation clearance	March - September
Reptile Survey	Prior to any works	Reptile Survey	Reptile Survey	Whole Site	April - October
eDNA Surveys	Prior to any works	Great Crested Newts	eDNA sampling	Ponds within 500m, if access possible	April - June

TABLE 8.1. SUMMARY OF RECOMMENDED FURTHER ECOLOGICAL WORK.

9.2 The scheme will also require a Green Infrastructure Statement prepared by or in conjunction with the project ecologist, and a management plan for ongoing maintenance of the habitats created.

10.0 References and Useful Information Sources

Bat Conservation Trust (2018) Bats and artificial lighting in the UK- bats and the built environment series www.bats.org.uk

ILP. (2023). *Bats and Artificial Lighting At Night*. Guidance Note GN08/23. Institute of Lighting Professionals & Bat Conservation Trust.

ILP. (2021). 'Guidance Note 1 for the reduction of obtrusive light. Available: <https://theilp.org.uk/publication/guidance-note-1-for-the-reduction-of-obtrusive-light-2021/>

JNCC, (2010), Handbook for Phase 1 habitat survey – a technique for environmental audit, JNCC, Peterborough, ISBN 0 86139 636 7.

Appendix A

Appendix A. Plant species list

This list is not exhaustive but refers to species observed during the site visit. Mosses (except indicators of bog habitat if present), lichens, algae and other lower plants and fungi were not generally identified except at a high level. No protected or notably rare plant species were found.

English Name	Scientific Name
Ash	<i>Fraxinus excelsior</i>
Bedstraw sp	<i>Gallium sp.</i>
Blackthorn	<i>Prunus spinosa</i>
Bramble	<i>Rubus fruticosus agg.</i>
Cherry Laurel	<i>Prunus laurocerasus</i>
Cleavers	<i>Galium aparine</i>
Cotoneaster	<i>Cotoneaster sp.</i>
Daffodil	<i>Narcissus pseudonarcissus</i>
Daisy	<i>Bellis perennis</i>
Dock	<i>Rumex obtusifolius</i>
Elder	<i>Sambucus nigra</i>
Foxglove	<i>Digitalis purpurea</i>
Germander speedwell	<i>Veronica chamaedrys</i>
Hart's Tongue fern	<i>Asplenium scolopendrium</i>
Hawthorn	<i>Crataegus monogyna</i>
Himalayan Honeysuckle	<i>Leycesteria formosa</i>
Hogweed	<i>Heracleum sphondylium</i>
Iris	<i>Iris pseudacorus</i>
Ivy	<i>Hedera sp.</i>
Lesser celandine	<i>Ficaria verna</i>
Leyland cypress	<i>Cupressocyparis leylandii</i>
Lords and Ladies	<i>Arum italicum</i>
Male fern	<i>Dryopteris filix-mas</i>
Meadow buttercup	<i>Ranunculus acris</i>
Moss	<i>Bryophyta sp.</i>
Mouse eared hawkweed	<i>Pilosella officinarum</i>
Ragwort	<i>Jacobaea vulgaris</i>
Red Campion	<i>Silene dioica</i>
Red Clover	<i>Trifolium pratense</i>
Ribwort Plantain	<i>Plantago lanceolata</i>
Rosebay Willowherb	<i>Chamaenerion angustifolium</i>
Sow Thistle	<i>Sonchus oleraceus</i>
Spear Thistle	<i>Cirsium vulgare</i>
Spurge	<i>Euphorbia sp.</i>

Sycamore	<i>Acer pseudoplatanus</i>
Tufted Sedge	<i>Carex lenticularis</i>
Tutsan	<i>Hypericum androsaemum</i>
Willow	<i>Salix sp.</i>
Wood ear	<i>Auricularia auricula-judae</i>
Yarrow	<i>Achillea millefolium</i>