Land at Mill Street, Tonyrefail

Ecological Appraisal Report

Prepared by:
The Environmental Dimension Partnership Ltd

On behalf of:
Lewis Homes

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Report Reference
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Executive Summary

S1 This Ecological Appraisal report has been prepared by The Environmental Dimension Partnership Ltd (EDP) on behalf of Lewis Homes (hereafter referred to as 'the Applicant'). This Appraisal considers the potential ecological constraints and opportunities in the context of proposed residential development of land situated to the east of Mill Street, Tonyrefail (hereafter referred to as 'the Application Site').

S2 To inform a planning application submission in respect of the future residential development of the Application Site, a Desk Study, Extended Phase 1 Habitat survey and further detailed surveys for badger (*Meles meles*), bats, dormouse (*Muscardinus avellanarius*), great crested newt (*Triturus cristatus*), otter (*Lutra lutra*), water vole (*Arvicola amphibious*), common reptiles and marsh fritillary butterfly (*Euphydryas aurinia*) were undertaken by EDP during 2019 and 2020.

S3 With respect to statutory designated sites, Blackmill Woodland Special Area of Conservation (SAC) is located circa 7.3km west of the Application Site, whilst Rhos Tonyrefail Site of Special Scientific Interest (SSSI) is situated circa 100m east at its closest point. With respect to non-statutory designated sites, Cae'r-ysgol Woodland Sites of Importance for Nature Conservation (SINC) is located 450m east of the Application Site.

S4 With respect to habitats onsite, the Application Site itself comprises four fields bound by a mature hedgerow network. Dense continuous scrub, semi-improved grassland, marshy grassland and ephemeral/short perennial and tall ruderal vegetation, alongside a belt of mature trees and areas of hardstanding/bare ground, dominate field **F1**, whilst fields **F2** and **F3** support areas of marshy grassland and poor semi-improved grassland. A block of broadleaved woodland occupies the southern extent of field **F4**, its northern half comprising allotments, sheds and associated areas of bare ground, scattered scrub and ephemeral/short perennial vegetation.

S5 In respect of those impacts arising from proposed development, specific proposals for the avoidance, mitigation and compensation of any predicted impacts include the retention, protection and enhancement of those features of greater ecological importance to compensate and mitigate for unavoidable habitat loss. Such measures seek to further ensure the delivery of opportunities for biodiversity enhancement as far as possible.

S6 Subject to the implementation of inherent and recommended mitigation and enhancement measures therefore, EDP's desk and field-based baseline investigations consider that those habitats and species supported by the Application Site do not pose a significant constraint to proposed development.

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Section 1
Introduction, Purpose and Context

1.1 This Ecological Appraisal report has been prepared by The Environmental Dimension Partnership Ltd (EDP) on behalf of Lewis Homes (hereafter referred to as 'the Applicant'). This Appraisal considers the potential ecological constraints and opportunities in the context of proposed residential development of land situated to the east of Mill Street, Tonyrefail (hereafter referred to as 'the Application Site').

1.2 EDP is an independent environmental planning consultancy with offices in Cirencester, Cardiff, Cheltenham and Shrewsbury. The practice provides advice to private and public sector clients throughout the UK in the fields of landscape, ecology, archaeology, cultural heritage, arboriculture, rights of way and masterplanning. Details of the practice can be obtained at our website www.edp-uk.co.uk.

Site Context

1.3 The Application Site is centred at approximate Ordnance Survey Grid Reference (OSGR) ST 010 878 within the Local Planning Authority of Rhondda Cynon Taff County Borough Council. The Application Site encompasses approximately 4.23 hectares (ha) located to the east of the town of Tonyrefail, and comprises four fields bound by a mature hedgerow network. Dense continuous scrub, semi-improved grassland, marshy grassland and ephemeral/short perennial and tall ruderal vegetation, alongside a belt of mature trees and areas of hardstanding/bare ground dominate field **F1**, whilst fields **F2** and **F3** support areas of marshy grassland and poor semi-improved grassland. A block of broadleaved woodland occupies the southern extent of field **F4**, its northern half comprising allotments, sheds and associated areas of bare ground, scattered scrub and ephemeral/short perennial vegetation. A stream flows east to west along the northern boundary of the Application Site. Residential properties and associated gardens otherwise occur off-site to the north and west.

1.4 With respect to the wider landscape, land to the north and west is dominated by residential housing. In contrast, land to the east and south comprises farmland and woodland blocks uninterrupted by roads. The M4 is located circa 7.4km to the south of the Application Site.

1.5 The Application Site comprises land allocated within the Southern Strategy Area for residential development under Policy SSA 10 – Housing Allocations ('Land east of Mill Street, Tonyrefail') within the Rhondda Cynon Taff Local Development Plan 2006 – 2021 (LDP) adopted in 2011.

Development Proposals

1.6 In brief, a hybrid planning application is proposed for residential development of up to 120 dwellings and associated works across the Application Site.

1.7 Specifically, full planning consent is sought for the first phase of development, encompassing the entirety of field **F1** measuring circa 1.58ha, to comprise the development of 42 residential dwellings. In addition, outline planning consent with all matters reserved except for access is sought in respect of the second phase of development, encompassing fields **F2**, **F3** and **F4** and totalling circa 2.65ha.

1.8 The proposals are illustrated within the detailed site layout prepared for the first phase of development and illustrative masterplan encompassing the second phase of development provided at **Appendix EDP 1**. Site location plans in respect of detailed and outline proposals are provided at **Appendix EDP 2**.

1.9 The ecological sensitivities of the land comprising the Application Site have necessarily influenced the emerging development framework for the Application Site through an iterative design process. The emerging masterplan therefore incorporates a degree of 'inherent' mitigation designed specifically to avoid or reduce the severity of any potential ecological impacts identified through the appraisal process.

Scope of Appraisal

1.10 This Ecological Appraisal describes the current ecological interest within and around the Application Site and wider area, which has been identified through standard desk-based and field-based investigations completed to date. It then considers the potential ecological impacts and opportunities for ecological enhancement based on the final masterplan (incorporating inherent mitigation) in the context of relevant legislation and planning policy. This Appraisal then goes on to identify the necessary additional measures to avoid, mitigate or provide compensation for potential impacts, and the mechanisms for securing such measures.

1.11 The remainder of this report is structured as follows:

- **Section 2** summarises the methodology employed in determining the baseline ecological conditions within and around the Application Site (with further details provided within Appendices and on Plans where appropriate);

- **Section 3** summarises the findings of the baseline ecological conditions collated to date (with further details also provided within Appendices and on Plans where appropriate) and identifies and evaluates any pertinent ecological features/receptors;

- **Section 4** describes the development proposals, how the design has been influenced by ecological factors, EDP's input to the design process and key components of inherent mitigation;

- **Section 5** considers the potential impacts of the proposal on pertinent ecological features in the context of legislative, planning policy and biodiversity action planning considerations. Recommended mitigation and enhancement measures are provided for the current and possible future planning stages; and

- **Section 6** summarises the inherent and recommended additional mitigation measures and provides the overall conclusions of the Appraisal.

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Section 2
Methodology (Baseline Investigations)

2.1 This section of the Ecological Appraisal summarises the methodologies employed in determining the baseline ecological conditions within and around the Application Site. This Appraisal has been undertaken by appropriately qualified ecologists using relevant best practice methodologies wherever possible. Reasons for any departure from best practice methodology are given and normally relate to the timing of EDP's commission and/or the availability of access to parts of the Application Site or wider survey area. Full details of the techniques and processes adopted are, where appropriate, provided within Appendices and on Plans to the rear of this report.

Desk Study

2.2 The desk study is an important element of undertaking an initial Ecological Appraisal of a site proposed for development, enabling the initial collation and review of contextual information such as designated sites, together with known records of protected and priority[1] species.

2.3 The desk study involved collating biodiversity information from the following sources:

- South East Wales Biodiversity Records Centre (SEWBReC); and
- Multi-Agency Geographic Information for the Countryside (MAGIC) website[2].

2.4 The desk study was undertaken in October 2019 and involved obtaining the following information:

- International statutory designations (10km radius) (**Plan EDP 1**);
- National statutory designations (5km radius) (**Plan EDP 1**);
- Non-statutory local sites (2km radius) (**Plan EDP 2**);
- Annex II bat species[3] records (2km radius); and
- All other protected/notable species records (2km radius).

[1] Species of principal importance listed under Section 7 of the Environment (Wales) Act 2016 which are cconsidered to be of key significance to sustain and improve biodiversity in relation to Wales.
[2] www.magic.gov.uk
[3] Bat species listed in Annex II of the EC Habitats Directive, namely: greater horseshoe; lesser horseshoe; barbastelle; and Bechstein's bat

2.5 The above search areas are considered sufficient to cover the potential Zones of Influence[4] of the proposed development in relation to designated sites, habitats and species.

Extended Phase 1 Survey

2.6 The survey technique adopted for the initial habitat assessment was at a level intermediate between a standard Phase 1 survey technique[5], based on habitat mapping and description, and a Phase 2 survey, based on detailed habitat and species surveys. Commonly known as an Extended Phase 1 survey, this level of survey does not aim to compile a complete floral and faunal inventory for the Application Site and wider area, but instead aims to scope those potential key ecological receptors occurring on site which may require further investigation.

2.7 All principal habitat types and dominant plant species present per habitat type were identified and mapped during the survey. In addition, any actual or potential protected species or species of importance likely to be supported by the Application Site were identified and scoped during the assessment.

2.8 The Extended Phase 1 survey was undertaken by a suitably experienced sub-consultant surveyor on behalf of EDP on 08 August 2019 as well as a thorough botanical survey due to the high diversity present within some of the fields. Where accessible, habitats located offsite but immediately adjacent were also included within the survey to more fully inform the scope of those further detailed surveys undertaken of the Application Site (**Plan EDP 3**).

Limitations

2.9 August is considered to be within the optimal period for undertaking an Extended Phase 1 survey. As such, the survey is not considered to have been limited by seasonal or climatic factors.

Detailed (Phase 2) Surveys

2.10 The scope of the Phase 2 surveys undertaken was defined following the initial studies described above (desk study and Extended Phase 1 survey). Those surveys 'scoped in' as part of the Ecological Appraisal are summarised in turn below. Other survey types which were not considered necessary/appropriate in this case, albeit commonly required as part of an Ecological Appraisal to inform development upon greenfield sites, are also discussed.

[4] Zone of Influence - the areas and resources that may be affected by the proposed development
[5] Joint Nature Conservation Council (2004) *Handbook for Phase 1 Habitat Survey – A Technique for Environmental Audit* (reprinted with minor corrections for original Nature Conservancy Council publication).

Botanical Assessment

2.11 During the Extended Phase 1 survey a botanical survey to DAFOR[6] level and utilising National Vegetation Classification (NVC) methodology where suitable was undertaken by a suitably qualified botanist of those grassland habitats assessed. All vascular plant and bryophyte species were recorded to DAFOR level with species lists and DAFOR scores recorded separately per habitat type surveyed.

2.12 The aim of the NVC survey was to classify the distinct plant communities and sub-communities supported within the fields assessed with respect to their species composition and relative abundance, in addition to determining their botanical value and relative nature conservation value of the swards present.

2.13 Vegetation communities identified were subsequently mapped and described in accordance with standard survey protocol[7].

Hedgerow Assessment

2.14 Hedgerows supported on and immediately adjacent to the Application Site were assessed during the Extended Phase 1 survey by a suitably qualified ecologist for their 'importance' in accordance with the Hedgerows Regulations 1997.

2.15 The aims of the hedgerow assessment were to:

- Identify hedgerows that are classified as 'important' under the Wildlife and Landscape criteria of the Hedgerows Regulations 1997; and

- Identify hedgerows that, although not deemed 'important' under the ecological criteria of the Hedgerow Regulations 1997 have ecological value in terms of species diversity or as potential wildlife corridors.

2.16 All boundaries were surveyed, with seven confirmed present within the Application Site and qualifying for assessment by being assessed to be greater than 30 years of age, being located adjacent to land in agricultural/horticultural use, and exceeding 20m in length or by being connected at both ends to another hedgerow of any length. The central 30m section of hedgerows measuring up to 100m in length was subject to survey, with two 30m sections assessed for hedgerows measuring up to 200m in length.

2.17 Hedgerows are considered 'important' should the hedgerow: be referred to in a record held by a biological records centre as containing protected plants (within 10 years) or birds and animals (within five years); contain species listed in Schedule 5 (animals) and eight (plants) of the Wildlife and Countryside Act 1981 (as amended), birds categorised

[6] DAFOR botanical survey technique – whereby occurrence of a species is noted to be Dominant, Abundant, Frequent, Occasional, or Rare

[7] Joint Nature Conservation Council (2004) *Handbook for Phase 1 Habitat Survey – A Technique for Environmental Audit* (reprinted with minor corrections for original Nature Conservancy Council publication).

as declining breeders[8], or any species categorised as 'endangered', 'extinct', 'rare' or 'vulnerable' by any of the British Red Data Books; or contain one of the following per average 30m section surveyed:

- Seven Schedule 3 species;
- Six Schedule 3 species and three listed features (see below);
- Schedule 3 species, including one of the following: black poplar (*Populus nigra subsp. Betulifolia*), large-leaved lime (*Tilia platyphyllos*), small-leaved lime (*Tilia cordata*) or wild service-tree (*Sorbus torminalis*);
- Five Schedule 3 species and four listed features; or
- Four Schedule 3 species, two listed features and lying adjacent to a bridleway or footpath.

2.18 Listed features include:

- A bank or wall which supports the hedgerow along at least half of its length;
- Gaps which together do not exceed 10% of the length of the hedgerow;
- At least one standard tree per 50m of hedge;
- At least three Schedule 2 woodland species within the hedgerow;
- A ditch along at least one half of the length of the hedgerow;
- Connections scoring 4 points or more (1 point per connection of the hedgerow with another and 2 points per connection of the hedgerow to a pond or broad-leaved woodland); or
- A parallel hedge within 15m of the hedgerow.

2.19 It is recognised that, with reference to the Hedgerow Regulations 1997, certain species of bird or animals listed in the Wildlife and Countryside Act (as amended) or by the Joint Nature Conservation Committee (JNCC), that could result in a hedgerow being recognised as 'important', may have gone unrecorded due to the timing and nature of the survey. Indeed, the use of the hedgerow by such species may be seasonal or at particular periods during the day. Data gained through the relevant Phase 2 surveys have therefore been included within this assessment.

[8] Bladwell S, Noble DG, Taylor R, Cryer J, Galliford H, Hayhow DB, Kirby W, Smith D, Vanstone A, Wotton SR (2018) *The state of birds in Wales 2018*. The RSPB, BTO, NRW and WOS. RSPB Cymru, Cardiff.

Badger

2.20 Badger (*Meles meles*) activity within the Application Site and wider area was assessed during the initial Extended Phase 1 survey in August 2019 and further updated through additional observations made over the course of the survey season. Any signs of badger activity such as holes, latrines, trails, snuffle holes and hairs on fencing or vegetation were recorded. Where holes of a size and shape consistent with badgers were identified, the following signs of badger activity were searched for in order to determine whether they were currently in active use:

- Fresh spoil outside entrances;
- Old bedding material (typically dried grass) outside entrances;
- Holes being cleared of leaf litter;
- Badger guard hairs; and
- Fresh tracks leading to/from the holes.

Limitations

2.21 Badger surveys can be undertaken at any time of year such that there were no seasonal or climatic constraints to this survey.

Bats

2.22 During the Extended Phase 1 surveys, habitats present within the Application Site and wider area were identified as having the potential to support foraging and commuting bats. In addition, semi-mature/mature trees were considered for their roosting potential. The following surveys for bats were therefore undertaken, with reference to best practice guidelines[9]:

- Bat roosting:
    - Ground level visual assessments of all mature trees onsite for bat roosting potential on 08 and 13 August 2019; and
    - Three subsequent aerial inspections of all trees identified as having moderate to high bat roost potential during the initial ground level assessment on 06, 12 and 13 September (first survey), 09 October 2019 (second survey) and 17 January 2020 (third survey).
- Bat foraging/commuting activity:

[9] Collins, J. (ed.) (2016). *Bat Surveys: for Professional Ecologists: Good Practice Guidelines* (3rd edition). The Bat Conservation Trust, London

- Manual transect surveys undertaken in August, September and October 2019 and in April and May 2020; and

- Automated detector surveys undertaken during August, September and October 2019 and in April and May 2020.

Investigations of Bat Roosting – Trees

Preliminary Ground Level Bat Roost Assessment

2.23 To determine the potential impacts of the proposed development upon bats potentially roosting within trees across the Application Site and wider survey area, all suitable trees onsite were subject to a ground level visual assessment with reference to current best practice guidance[10] (**Plan EDP 4a**).

2.24 The tree survey involved a ground-based visual assessment of trees for the presence of, or potential to support, roosting bats. The survey was undertaken on 08 and 13 August 2019 by a suitably qualified and Natural Resources Wales (NRW) licensed ecologist. The trees were searched as thoroughly as possible from ground level, with all elevations covered where accessibility allowed.

2.25 Suitable features for roosting bats sought for during the assessment included:

- Loss/peeling/fissured bark;
- Natural holes e.g. rot holes and holes from fallen limbs;
- Woodpecker holes;
- Cracks/splits or hollow tree trunks/limbs; and
- Thick-stemmed ivy.

2.26 Signs of roosting bats sought for included:

- Bat/s roosting *in-situ*;
- Bat droppings within or beneath a feature;
- Staining around or beneath a feature;
- Oily marks (staining) around roost access points;
- Audible squeaking from the roost;

[10] Collins, J. (ed.) (2016). '*Bat Surveys for Professional Ecologists: Good Practice Guidelines 3rd edition'*. Bat Conservation Trust, London.

- Large/regularly used roosts or regularly used sites may produce an odour; and
- Flies around the roost, attracted by the smell of guano.

2.27 Based upon the results of the visual assessment and features/evidence identified, the following ratings for trees were used during the assessment:

- **Known or confirmed roost** – European Protected Species (EPS) licence required for works to tree to be completed lawfully;
- **High potential** – Tree supports one or more features that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time;
- **Moderate potential** – Tree supports one or more features that could be used by bats but are unlikely to support a roost type of high conservation status;
- **Low potential** – Tree supports one or more features that could be used by individual bats opportunistically, or is of sufficient size and age to contain such features; and
- **Negligible potential** – Negligible features likely to support roosting bats.

Limitations

2.28 Visual assessments of trees for roosting bats can be undertaken at any time of year and this assessment was therefore not limited by seasonal or climatic factors.

2.29 Bats are mobile animals and will move between a series of different roost sites, frequently establishing and occupying new roost sites depending on seasonal requirements and resources available locally. This survey, therefore, only provides a snapshot of the conditions present at the time of survey.

Aerial Tree Inspection

2.30 The findings of the preliminary ground level bat tree roost assessment confirmed the presence of a number of trees with moderate and high potential to support roosting bats. In line with best practice guidelines[11] therefore, an aerial climbing inspection was undertaken thereafter of all trees initially identified from ground level as supporting features considered suitable for bat roosting. The purpose of the aerial inspection was to comprehensively assess all accessible potential roost features at height, to more fully determine the suitability of each tree to support roosting bats, in addition to searching for visible evidence of bat use not otherwise visible from the ground.

[11] Collins, J. (ed.) (2016). Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn). The Bat Conservation Trust, London.

2.31 The initial aerial inspection was undertaken on all the trees identified as having roost potential on 06, 12 and 13 September 2019 by a suitably experienced and qualified bat licensed ecologist and assistant, using a mixture of tree climbing equipment and ladders to access potential roost features. An endoscope (RIDGID Seesnake with 15mm and 5mm diameter head and six-foot extension), torches and mirrors were utilised, where necessary, to inspect potential roosting features. Repeat aerial inspections of trees with medium or high potential to support roosting bats were subsequently completed on 09 October 2019 and 17 January 2020 (**Plan EDP 4b**).

2.32 Details of each potential roosting feature were recorded including the type of feature, location within the tree, height and orientation of feature, notes relating to the feature including any evidence of bats and the potential of each feature to support roosting bats (confirmed roost, high, moderate, low or negligible potential).

Investigations of Bat Foraging/Commuting Activity

Manual Transect Surveys

2.33 Manual transect surveys were undertaken across the Application Site and wider survey area to identify areas of bat foraging activity and commuting routes used by bats. The manual transect surveys were undertaken in August, September and October 2019 and April and May 2020, as illustrated within **Plan EDP 5**.

2.34 With reference to relevant best practice guidelines, surveys were spread over the course of the active bat season and completed within the optimal survey months of April to October inclusive, divided between years 2019 and 2020.

2.35 Full details including the survey type, date, timing, and weather conditions during each of the transect surveys undertaken in 2019 and 2020 is given in **Table EDP 2.1**. Weather conditions were largely optimum for bat surveys, being relatively warm with light winds and no rain.

Table EDP 2.1: Date, timing and weather conditions of bat activity surveys.

Survey date	Dusk/ Dawn	Sunrise/ Sunset Time	Survey Time	Weather conditions			
				Temp (°C)	Cloud (%)	Rain	Wind (Beaufort scale)
08.08.19	Dusk	20:41	20:41 – 22:41	15.0 – 20.0	95 – 100	Nil	1
02.09.19	Dusk	19:59	19:59 – 21:59	17.0 – 20.0	95 – 100	Nil	3
02.10.19	Dusk	18:49	18:49 – 20:49	11.3 – 6.1	5 – 80	Nil	0 – 1
20.04.20	Dusk	20:20	20:20 – 22:20	11.0 – 14.0	5 – 20	Nil	3
26.05.20	Dusk	21:15	21:15-23:15	17.0 – 18.0	40	Nil	1

2.36 Manual transect surveys were completed by experienced bat surveyors across two transect survey routes which were designed to provide a representative cover of potential foraging or commuting habitats onsite and immediately adjacent, namely adjacent to

woodland, hedgerow, tree and scrub habitats. Transect routes were walked at a slow and steady pace with 10 'listening stops', lasting approximately five minutes each. Transect routes overlapped during the first three listening stops and the final listening stop. All bats were recorded and their behaviour marked on survey maps in order to characterise the value of the site and its component habitats to foraging and commuting bats.

2.37 Activity surveys were conducted using Elekon Batlogger M bat detectors. Observations of the time, location, and activity of all bats seen or heard were noted. Bats were identified on the basis of their characteristic echolocation calls, which were recorded and analysed using computer sonogram analysis (BatExplorer) to confirm species identification. Species of *Myotis* bats and long-eared bats (*Plecotus sp.)* are difficult to tell apart solely from their echolocation calls and were therefore grouped as such.

Automated Detector Surveys

2.38 To supplement the bat transect survey data and to provide a more robust assessment of activity by horseshoe bat species (which are often under recorded by transect surveys), bat activity within and immediately adjacent to the Application Site was also sampled using static bat detectors which automatically trigger and record bat echolocation calls.

2.39 Anabat Express detectors (hereafter referred to as 'Anabats') were deployed in two different locations across the Application Site and wider survey area per survey undertaken, as illustrated within **Plan EDP 5**. Descriptions of the locations, and adjacent habitats within which Anabats were deployed are provided in **Table EDP 2.2.**

Table EDP 2.2: Anabat ID, location and adjacent habitat.

Anabat ID	Survey Period	Location Description	Adjacent/Nearby Habitat
A	08.08.19 – 12.08.19	In a willow tree alongside a brook on the northern boundary of the offsite field **F7**.	Rush-pasture, marshy grassland.
B	08.08.19 – 12.08.19	Attached to a hawthorn tree in hedgerow **H5** along the south-western boundary of field **F3**.	Cattle grazed grassland.
C	02.09.19 – 06.09.19	On the field boundary between the field **F3** and broadleaved woodland within **F4**.	Cattle grazed grassland.
D	02.09.19 – 06.09.19	On the northern boundary of offsite field **F6**, adjacent to a small running ditch.	Rush-pasture, marshy grassland.
E	27.09.19 – 01.10.19	In the southeast corner of field **F5** alongside hedgerow **H8**, attached to a mature rowan tree.	Cattle grazed grassland with rush-pasture.
F	27.09.19 – 01.10.19	Attached to a mature oak tree in the north-east corner of field **F2**.	Cattle grazed grassland with rush-pasture.

Anabat ID	Survey Period	Location Description	Adjacent/Nearby Habitat
G	21.04.20 – 27.04.20	Attached to a willow tree along the eastern boundary of offsite field **F7**.	Cattle grazed marshy grassland.
H	21.04.20 – 27.04.20	Attached to a mature ash tree growing on top of stone wall separating fields **F2** and **F3**.	Cattle grazed poor semi-improved grassland and marshy grassland.
I	20.05.20 – 26.05.20	Attached to a small holly tree on southern edge of field **F7**.	Cattle grazed marshy grassland.
J	20.05.20 – 26.05.20	Attached to a hazel along the north-western edge of field **F3**.	Cattle grazed poor semi-improved grassland.

2.40 Each Anabat was deployed for five nights per survey, providing a total of fifty nights of Anabat data. The Anabats were fixed in secure locations, with an external microphone attached 1.5-2m above ground and directed away from the tree/branch/wall to maximise detection sensitivity. Weather data for the sampling period was obtained from the nearest weather station. **Table EDP 2.3** details the sampling dates, microphone details and weather conditions for the Anabats deployed during the five recording periods.

Table EDP 2.3: Anabat sampling dates and details.

Sampling Period	Anabat ID	Microphone			Min temp (°C)
		Ht (m)	Direction	Sensitivity	
08.08.19 – 12.08.19	A	1.5	south	N/A	11
	B	1.5	west	N/A	
02.09.19 – 06.09.19	C	2.0	east	N/A	9
	D	1.75	south	N/A	
27.09.19 – 01.10.19	E	2.0	west	N/A	10
	F	2.0	west	N/A	
21.04.20 – 27.04.20	G	1.8	north-west	N/A	6
	H	2.0	south-west	N/A	
20.05.20 – 26.05.20	I	1.5	south-west	N/A	5
	J	2.0	south-east	N/A	

2.41 The echolocation calls recorded by the Anabats were filtered for noise files (i.e. sound files created when noise triggers the Anabat to record) and then specifically for each of the UK's bat species using AnalookW software filter function. The parameters for the noise filter are based on that proposed by Chris Corben and Kim Livengood[12] and are provided in **Table EDP 2.4**. All files passing the various filters were checked manually using sonogram analysis (AnalookW or Insight) in accordance with published parameters[13] to confirm the species identification of each bat call.

[12] Taken from Making an Antinoise Filter presentation from 2010 Annual Bat Conference
[13] Russ (2012). *British Bat Calls, a guide to species identification*. Pelagic Publishing, Exeter

Table EDP 2.4: Filtration values used by Analook software to remove noise files.

Filter	Smoothness	Frequency (Fc (kHz))		Duration (ms)	
		Min	Max	Min	Max
Noise filter	50	15	120	2	50

Limitations

2.42 The identification of calls and species using Analook software is dependent upon the quality of the recording made which can be influenced by the following factors, which may limit levels of activity and species recorded:

- Weather conditions – rainfall and wind;
- Distance of an individual bat from the Anabat;
- Presence of obstructions through which the noise must pass e.g. trees; and
- Proximity of other noise sources such as roads.

Dormouse

2.43 In respect of the suitability of hedgerows, woodland and scrub habitat for dormouse, a nest tube survey to determine the presence/likely absence of dormouse within the Application Site and adjacent connecting habitats was completed during 2019 – 2020 in accordance with best practice guidelines.

2.44 A total of 105 standard nest tubes, each comprising a wooden tray and nesting tube made from plastic tree guard material[16], were deployed across the Application Site and adjacent connecting habitats at approximately 20m intervals on 29 August 2019 (**Plan EDP 6**). Nest tubes were erected at approximately 1.5m to 2m above ground and tied to suitable lower branches of trees. Tubes were left *in situ* and checked at regular intervals during suitable weather conditions for evidence of use by dormouse on four separate occasions between August to November 2019 and on a further two occasions in April and May 2020.

2.45 The survey area comprised a representative area of scrub, hedgerows and woodland parcels within and immediately adjacent to the Application Site, with nest tubes evenly distributed across such habitat types.

2.46 In accordance with best practice guidance[17], whereby the index of probability in detecting dormouse presence within nest tubes is calculated according to set scores given for each of the different months (for a minimum deployment of fifty nest tubes), the total survey effort score employed is considered to be sufficient to assume presence or absence,

[16] Specifications as per Mammal Society nest tube product.
[17] Bright, P., Morris, P., & Mitchell-Jones. T. (2006). The Dormouse Conservation Handbook, 2nd Edition.

exceeding the minimum survey effort score of 20 recommended, as detailed in **Table EDP 2.5**.

Table EDP 2.5: Index of probability of finding dormice present in nest tubes in any one month.

Month	Index of Probability	Nest tubes checked	Survey Date
August 2019	n/a	*Nest tubes deployed*	29.08.2019
September 2019	7	✔	26.09.2019
October 2019	2	✔	16.10.2019
November 2019	2	✔	21.11.2019
April 2020	1	✔	27.04.2020
May 2020	4	✔	26.05.2020
Total survey effort score	**33.6** (Total of 16 points per 50 tubes; equivalent to 33.6 points per 105 tubes)		

2.47 Evidence such as the presence of individuals, nests and/or food caches was recorded during each of the surveys. Incidental sightings or evidence of wood mice (*Apodemus sylvaticus*) or other small mammals were also recorded where present, with all tubes emptied of wood mouse nests and individuals, cleaned and re-hung.

Limitations

2.48 Dormouse surveys were completed during the main dormouse active season (April to November). As such, the survey is not considered to have been limited by seasonal factors.

Great Crested Newt

Habitat Suitability Assessment of Water Bodies

2.49 A review of OS mapping identified two ponds located within 500m of the Application Site, including one pond situated circa 120m to the south and a second waterbody situated circa 390m to the south, in association with farmsteads. A Habitat Suitability Index (HSI) developed by Oldham *et al.* (2000) was therefore attempted of these ponds on 27 April 2020 where accessible for their potential to support great crested newt. This comprised a standard assessment system that uses numerous criteria such as water quality, fish/waterfowl presence and surrounding terrestrial habitat from which a score is derived.

2.50 Water bodies with higher scores are considered more likely to support great crested newts than those with low scores. HSI scores relating to the suitability of the pond assessed to support great crested newt are described within **Table EDP 2.6**.

Table EDP 2.6: HSI scores and inferred pond suitability.

HSI Score	Pond suitability to support great crested newts
<0.5	Poor suitability
0.5 – 0.59	Below average suitability
0.6 – 0.69	Average suitability
0.7 – 0.79	Good suitability

HSI Score	Pond suitability to support great crested newts
> 0.8	Excellent suitability

Otter and Water Vole

2.51 The Application Site supports an unnamed watercourse aligning the northern boundary of onsite field **F1** and offsite field **F7**, in addition to a dry ditch running along the northern and eastern boundaries of fields **F1** and **F2**, as illustrated within **Plan EDP 3**.

2.52 An initial assessment of the suitability of the watercourse and ditch to support otter and water vole was undertaken during the Extended Phase 1 Habitat survey on 08 August 2019. The assessment was completed by a suitably experienced surveyor with reference to best practise guidelines. Following the initial habitat assessment, further detailed surveys of each watercourse for signs of otter and water vole activity was undertaken by an experienced surveyor on 17 September 2019 and 27 April 2020.

2.53 Each survey was undertaken in accordance with best practice guidelines for otter and water vole during which all signs of otter and water vole activity were recorded. The otter survey involved a visual inspection for characteristic signs of otter, including evidence of feeding remains, prints, tracks, spraints and resting sites including lay-ups and holts. Features considered to have the potential to be used as holts were also documented during the survey. In the case of water vole, the survey involved a search for feeding stations (including feeding stations and grazed lawns), faeces (latrines and droppings), footprints, burrows and possible runs.

Reptiles

2.54 A number of suitable habitats for common reptile species occur throughout the Application Site, including semi-improved and marshy grassland habitat and edge habitats associated with woodland and scrub.

2.55 To determine the extent of usage of the Application Site by common reptile species, reptile surveys were undertaken across the Application Site and within suitable connecting habitats adjacent.

2.56 A total of 153 artificial refugia comprising roofing felt sheets measuring approximately 1m x 0.5m were deployed within suitable reptile habitat across the Application Site on 23 August 2019, as illustrated within **Plan EDP 7**. Reptile refugia were left undisturbed in situ for approximately two weeks prior to the commencement of the seven reptile surveys visits undertaken thereafter. Detailed weather conditions recorded during each survey visit undertaken throughout 2019 are summarised in **Table EDP 2.7**.

Table EDP 2.7: Date, timing and weather conditions of reptile survey visits undertaken.

Visit No.	Date	Start-Finish Time	Air Temp Range (°C)	Wind Speed (Beaufort)	Cloud Cover (%)	Rain
1	05.09.19	10:00 – 11:55	13.9 – 14.8	1	40 – 55	Nil
2	10.09.19	15:15 – 16:50	15.1 – 15.5	2 – 3	20	Nil
3	13.09.19	10:15 – 12:00	11.7 – 12.7	1 – 2	5	Nil
4	17.09.19	15:00 – 16:15	14.8 – 15.4	1	20 – 35	Nil
5	25.09.19	15:45 – 16:50	15.6 – 16.1	1 – 2	65 – 75	Nil
6	28.09.19	14:00 – 15:15	14.1 – 14.3	2 – 3	85 – 95	Intermittent showers
7	30.09.19	09:00 – 10:00	13.5 – 14.0	0 – 1	100	Nil

2.57 During each survey visit, artificial refugia were individually checked by experienced ecologists with any reptiles observed recorded, along with notes on their life stage (adult/juvenile) and sex where possible.

Limitations

2.58 Reptile surveys undertaken within the Application Site were completed during suitable weather conditions and within recognised optimal months for reptile surveys. All temperatures recorded during the reptile surveys were generally within the recommended parameters for optimal conditions.

Marsh Fritillary Butterfly

2.59 Areas of marshy grassland occur within fields **F1** and **F2**, whilst additional areas of marshy grassland, considered to be species-rich, also occur immediately adjacent, within fields **F5**, **F6** and **F7**. Of these, offsite fields **F6** and **F7** support occurrences of Devil's-bit scabious (*Succisa pratensis*), the food plant of marsh fritillary butterfly. Furthermore, Rhos Tonyrefail SSSI, which encompasses several discrete units scattered across the wider landscape, the closest of which is circa 100m east of the Application Site, is of special interest for its populations for marshy fritillary and species-rich grassland communities. As such, the presence of this species in the wider landscape is presumed.

2.60 In consideration of the presence of desk study records and suitable habitats for this species occurring within proximity to the Application Site, a detailed survey of suitable habitats within offsite fields **F6** and **F7** occurring to the immediate east of the Application Site was undertaken to confirm presence/infer current absence of marsh fritillary butterfly.

Larval Web Counts

2.61 To confirm the presence or likely absence of marsh fritillary butterfly within those fields surveyed, larval web counts were undertaken on 17 September 2019 and repeated on 26 August and 03 September 2020 by a suitably qualified ecologist, so as to capture the

late summer months in accordance with best practice guidance[18]. The weather at the time of survey was 15ºC and dry with 40% cloud cover and light winds (Beaufort scale 1).

2.62 Each field was subdivided into several transects circa 4m apart and travelling the full length of each field. Each transect was walked at a steady pace and all occurrences of Devil's-bit scabious within 2m of each transect were searched for marsh fritillary larval webs and larvae. The distribution of survey sections across fields **F6** and **F7** are illustrated on **Plan EDP 8**.

Limitations

2.63 Marsh fritillary surveys were completed during suitable weather conditions and sought to capture the optimal survey window between mid-August and early September. Whilst it is recognised that larvae may have entered hibernation early during the 2019 survey such that evidence of this species may have been missed, the findings of the update surveys completed during 2020 are considered robust.

Surveys Scoped Out

2.64 **Table EDP 2.6** below summarises other survey types which, whilst commonly required to inform a planning submission for development, were not considered necessary/appropriate in this case.

Table EDP 2.6: Ecology surveys scoped out.

Survey Type	Reasons for scoping out
Bird Surveys	Priority and protected bird species records returned during the desk study from within 2km of the Application Site include: cuckoo (*Cuculus canorus*), curlew (*Numenius arquata*), lapwing (*Vanellus vanellus*), bullfinch (*Pyrrhula pyrrhula*), dunnock (*Prunella modularis*), song thrush (*Turdus philomelos*), house sparrow (*Passer domesticus*), starling (*Sturnus vulgaris*) and redwing (*Turdus iliacus*). Additional records of Schedule 1 species returned included goshawk (*Accipiter gentilis*), hen harrier (*Circus cyaneus*), red kite (*Milvus milvus*), merlin (*Falco columbarius*), peregrine (*Falco peregrinus*), barn owl (*Tyto alba*), fieldfare (*Turdus pilaris*) and crossbill (*Loxia curvirostra*). Given the small size of the Application Site and limited extent of suitable habitats supported therein, no further breeding or wintering bird surveys are recommended in this instance. Instead, a generalist assemblage of breeding birds is assumed, with precautionary measures of clearance advised during the pre-construction phases of development to ensure no harm/disturbance to nesting birds during the breeding bird season (March to August inclusive).

[18] (UKBMS) Ng2: Monitoring Marsh Fritillary Larval Webs (Centre for Ecology and Hydrology and Butterfly Conservation).

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Section 3
Results (Baseline Conditions)

3.1 This section of the Ecological Appraisal summarises current ecological conditions determined through the course of update field-based investigations described in **Section 2**. In particular, this section identifies and evaluates those ecological features/receptors considered within this report and which are pertinent in the context of the proposed development. Further technical details are, where appropriate, provided within Appendices and on Plans to the rear of this report.

Designated Sites

3.2 Information regarding designated sites was obtained during the Desk Study from the MAGIC website and SEWBReC. Statutory designations (those receiving legal protection) and non-statutory designations (those receiving planning policy protection only) are discussed in turn below.

Statutory Designations

3.3 Statutory designations represent the most significant ecological receptors, being of recognised importance at an international and/or national level. International designations include Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and Ramsar Sites. National designations include Sites of Special Scientific Interest (SSSIs) and National Nature Reserves (NNRs).

3.4 No part of the Application Site is covered by any statutory designations. However, there are a number of such designations within the Application Site's potential zone of influence, as described below/summarised in **Table EDP 3.1** and illustrated in **Plan EDP 1**.

Table EDP 3.1: Statutory designations within the site's potential zone of influence.

Designation	Distance from Study Area (approx.)	Brief Description
Special Area of Conservation (SAC) within 10km		
Blackmill Woodlands SAC	7.3km west	This site comprises old sessile oak woods situated at the southern extreme of the habitat's range in Wales. An acidic ground flora of bilberry (*Vaccinium myrtillus*) and wavy hair-grass (*Deschampsia flexuosa*) dominates.
Site of Special Scientific Interest (SSSI) within 5km		
Rhos Tonyrefail SSSI	100m east of the Application Site at its closest point	A network of seven groups of fields scattered around Tonyrefail. Large lowland site of special interest for its marshy grassland, acid flush, species-rich neutral grassland, acid grassland, wet heath and blanket mire. Also, of interest for its population of marsh fritillary butterfly.

Designation	Distance from Study Area (approx.)	Brief Description
Llantrisant Common and Pastures SSSI	4.3km south-east	A 113.2ha site important for its extensive area of predominantly acidic marshy grassland in a lowland setting and for smaller areas of species-rich neutral and acidic grassland and soligenous flush. The nationally scarce Cornish moneywort (*Sibthorpia europaea*) has been recorded growing at the edges of drainage ditches on site. Also, the nationally rare bog earwort (*Scapania paludicola*) occurs within the marshy grassland on the Common. Other species of note include ivy-leaved bellflower (*Wahlenbergia hederacea*) and royal fern (*Osmunda regalis*).
Nant Gelliwion Woodland SSSI	4.3km east	Mixed deciduous woodland dominated by stands of sessile oak (*Quercus petraea*). The stands occupy a small tributary valley of the Rhondda which flows over Pennant Sandstone and superficial deposits of boulder clay. A ground flora of sweet vernal grass (*Anthoxanthum odoratum*), creeping soft grass (*Holcus mollis*), bluebell (*Hyacinthoides non-scripta*), bracken (*Pteridium aquilinum*) and wood sorrel (*Oxalis acetosella*) can be found within the drier portions of the site. In wetter areas, a ground flora of Marsh violet (*Viola palustris*), sedges (*Carex spp.*), reed grass (*Glyceria* spp.) and meadowsweet (*Filipendula ulmaria*) is commonly found.
Brynna a Wern Tarw SSSI	4.8km south-west	Brynna a Wern Tarw comprises a series of enclosed pastures, interspersed with small woodlands and hedgerows. The 130.7ha site is important for its large area of mixed, species-rich lowland grassland. This includes significant areas of marshy and dry neutral grassland. The marshy grassland and frequent devil's-bit scabious supports a metapopulation of marsh fritillary, which centres on Brynna a Wern Tarw. In addition, the network of hedgerows and mature scrub occurring on site provide habitat for dormouse.

Non-Statutory Designations

3.5 Non-statutory designations are also commonly referred to in planning policies as 'local sites', although in fact these designations are typically considered to be of importance at a county level. In Rhondda Cynon Taff County Borough Council (RCTCBC), such designations are named Sites of Importance for Nature Conservations (SINCs). Additional

designated sites which should be considered at this level include Local Nature Reserves (LNRs) and Ancient Semi Natural Woodland (ASNW), where these are not covered by other designations.

3.6 Non-statutory sites associated with the Application Site are summarised at **Table EDP 3.2** with further details provided at **Plan EDP 2**. No SINCs fall within the Application Site; however, multiple SINCs are within the potential zone of influence.

Table EDP 3.2: Non-statutory designations within the site's potential zone of influence.

Designation	Distance from Site (approx.)	Brief Description
Site of Importance for Nature Conservation (SINC) within 2km		
Cae'r-ysgol Woodland (SINC 118)	450m east	An area of ancient woodland situated along the southern edge of part of the Rhos Tonyrefail SSSI. The woodland supports a diverse ground flora and is recognised as good woodland bird and bat habitat.
Gilfach Road Woodlands (SINC 167)	900m west	The Nant Eirin which runs through the SINC supports brown trout, dipper, grey wagtail and potentially otter. The woodlands associated with the Nant Eirin supports a diverse ground flora as well as being suitable for bats and dormouse. The marshy grassland and associated devil's-bit scabious has the potential to support marsh fritillary butterfly. An old harvest mouse nest has been discovered within the marshy grassland.
Tonyrefail East (SINC 117)	1km east	The SINC includes the upper section of the Nant Muchudd stream and supports areas of marshy grassland, woodland and neutral grassland which are connected to the Rhos Tonyrefail SSSI. The woodland within the SINC is recognised as good woodland bird and bat habitat and supports the purple hairstreak butterfly. The marshy grassland has potential to support marsh fritillary butterfly.
River Ely (SINC 92)* [19]	1km south	Running north to south through Tonyrefail with associated riparian woodland and floodplain grassland.
Tonyrefail Mountain (SINC 107)*	1.2km south	An upland complex of wet heath, marshy grassland, acid grassland, acid flushes and basin mired on peat.
Penrhiw-fer Road Woodland (SINC 121)	1.2km south	An area of wet woodland and associated wet/marshy grassland which together provide valuable bird and bat habitat. The marshy grassland has potential to support small pearl-bordered fritillary and marsh fritillary butterfly.

[19] * Pers Comm. With the Council Ecologist 31.03.20

Designation	Distance from Site (approx.)	Brief Description
The Glyn (SINC 119)	1.5km north-east	Includes ancient woodland and marshy grassland situated along the eastern edge of part of the Rhos Tonyrefail SSSI. The woodland supports a species-rich ground flora and is recognised as good woodland bird and bat habitat.
Llanilid Valley (SINC 108)	1.5km south-west	The valley of the Nant Llanilid is important for its diverse broadleaved woodland and marshy grassland. The woodland supports a diverse ground flora and is recognised for its value to birds as well as potentially supporting bats and dormouse. Parts of the marshy grassland within the valley have been recognised as good condition marsh fritillary butterfly habitat. The valley also has potential to support otter.
Pant-y-ddraenen (SINC 113)*	1.9km south-east	A series of marshy grassland and semi-improved neutral grassland pastures which wrap around the Rhos Tonyrefail SSSI.
Mynydd y Glyn (SINC 120)	2.5km north-east	The SINC supports large areas of upland bog, valley mire, wet and dry heath and acid grassland located on the south and west facing upper slopes of Mynydd y Glyn.
Parc Eirin (SINC 166)	2.7km east	Parc Eirin is important for its oak woodland and associated acid grassland, lowland marshy grassland and peat bog. The grassland predominantly comprises purple moor-grass and rush pasture interspersed with areas of wet heath which support species such as tormentil, greater bird's-foot trefoil, and occasional devil's-bit scabious. Common cotton grass is also present.
Nant Muchudd (SINC 111)	3.9km south-east	The Nant Muchudd stream itself supports salmon, brown trout, otter, dipper and grey wagtail whilst the much of the wooded valley sides comprise ancient woodland supporting a species-rich understorey and ground flora. The valley also supports areas of alder carr and marshy grassland as well as species-rich neutral grassland which as potential to support dingy skipper.

Habitats

3.7 The main habitat types present within and immediately adjacent to the Application Site, and their dominant/characteristic plant species, are described in turn below. These descriptions should be read in conjunction with **Plan EDP 3** which illustrates their distribution and the illustrative site photographs provided at **Appendix EDP 3**.

Allotments

3.8 Allotments are present along the western edge of the Application Site across the northern half of field **F4**, including a smallholding and four actively managed allotments.

3.9 The smallholding comprises a large yard forming the northern extent of field **F4**, mostly covered with creeping yellow-cress (*Rorippa sylvestris*) with some swine cress (*Coronopus squamata*). This yard was in use by numerous chickens and ducks at the time of the Extended Phase 1 survey and it is likely that these find those two species of plant distasteful. Around the northern and eastern edge of this yard there are sheds, small barns, and animal pens. A recently erected mesh fence forms its western boundary, with Japanese knotweed (*Fallopia japonica*), an invasive species[20], present at its base.

3.10 To the immediate south of the small holding lies four active allotments divided by trimmed hedges of oriental privet (*Ligustrum ovalifolium*). Numerous small sheds are located along its western edge, adjacent to the small paved access road that forms the western boundary of the Application Site. The allotments are well-managed, with species present few in number and of very common species such as shepherd's purse (*Capsella bursa-pastoralis*), annual meadow-grass (*Poa annua*), creeping buttercup (*Ranunculus repens*) and nettle (*Urtica dioica*).

3.11 The allotment habitats within the Application Site are considered to be of negligible importance per se.

Broadleaved Woodland

3.12 A block of broadleaved woodland is located at the far southern extent of field **F4** which likely comprises outgrowth from surrounding boundary hedgerows, merging with dense scrub. This area of woodland has sessile oak (*Quercus petr*aea) and ash (*Fraxinus excelsior*) along its edges, but the body of woodland is dominated by mature goat willow (*Salix caprea*), grey willow (*Salix caprea*) and their hybrid.

3.13 This woodland is very open and has a poorly developed understorey – just occasional hawthorn (*Crataegus monogyna*), garden privet (*Ligustrum ovalifolium*), hazel (*Corylus avellana*), and young ash with low sprawling bramble. Ivy is the most common species in the field layer although significant parts of the field layer have been destroyed by off-road motorbikes that have created large swathes of bare ground. In places, there is some opposite-leaved golden-saxifrage (*Chrysosplenium oppositifolium*), whilst herb Robert (*Geranium robertianum*) and herb benet (*Geum urbanu*m) are occasional. There are also specimens of male fern (*Dryopteris filix-mas*), hard shield fern (*Polystichum aculeatum*), harts-tongue (*Asplenium scolopendrium*), broad buckler fern (*Dryopteris dilatate*) and yellow pimpernel (*Lysimachia nemorum*).

3.14 In addition, a small belt of broadleaved woodland is located along the south-western edge of field **F1**. This woodland is essentially an overgrown, old field boundary hedgerow and

[20] Listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) whereby it is an offence to plant or otherwise cause such species to grow in the wild.

incorporates dense mature scrub. Semi-mature sessile oaks are common here along with ash, hazel, hawthorn, goat willow and some downy birch (*Betula pubescens*), alder (*Alnus glutinosa*) and sycamore (*Acer pseudoplatanus*). Closer to its southern and western edges there is enchanter's nightshade *(Circaea lutetiana*) and ivy (*Hedera helix*) whilst bluebell (*Hyacinthoides non-scripta*) is occasional along the old hedge banks. Japanese knotweed is also quite frequent here.

3.15 Species recorded within woodland habitats are provided at **Appendix EDP 4**. Woodland supported by the Application Site is considered to be of importance at the **Local** level being a priority habitat[21] and its potential to support protected and notable species.

Dense Continuous Scrub

3.16 Field **F1** forming the northern half of the Application Site is dominated by dense and scattered scrub. The dominant shrub species include grey willow (*Salix cinerea*), goat willow and their hybrid *Salix* x *reichardtii*, whilst osier (*Salix viminalis*) and eared willow (*Salix aurita*) are also present. There is much bramble and some dog rose (*Rosa canina* agg.) along with young, downy birch (*Betula pubescens*), ash, hazel, hawthorn and sessile oak. Himalayan balsam (*Impatiens glandulifera*), an invasive species[22], is also present throughout.

3.17 The majority of dense scrub onsite is located within the area of mosaic habitat present across field **F1**. However a second area of dense scrub is also present to the immediate north of the area of broadleaved woodland within field **F4**. Bramble dominates its northern edge, but this area is otherwise relatively open within its centre. Fly tipping has occurred along its southern edge.

3.18 Species recorded within scrub habitats are provided at **Appendix EDP 4**. Scrub habitat supported by the Application Site is considered to be of importance at the **Site** level only.

Hedgerows

3.19 Fields comprising the Application Site and located adjacent are generally bound by a hedgerow network, many of which have since become outgrown and subsumed by scrub habitat such that they are no longer identifiable as discrete hedgerows.

3.20 Distinct hedgerows do however remain in the south-western half of the Application Site. Hedgerow **H1** forming the boundary between field **F2** and **F3** comprises a dilapidated stone-faced bank supporting mature and semi-mature sessile oak, but with no associated woodland flora species. Mosses are otherwise common. Hedgerow **H2** aligning part of the north-western boundary of field **F3** is a tall, unmanaged hedgerow dominated by large hazel stools. Heavy shading has resulted in a species poor field layer, with bramble common on the field edge of this boundary. Hedgerow **H3** is species rich and forms the

[21] Habitats of principal importance listed under Section 7 of the Environment (Wales) Act 2016 which are considered to be of key significance to sustain and improve biodiversity in relation to Wales.

[22] Listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) whereby it is an offence to plant or otherwise cause such species to grow in the wild

southern boundary of field **F3**, comprising a recently laid, coppiced hedgerow atop a stone bank. Ground flora recorded include wild strawberry (*Fragaria vesca*) and greater stitchwort (*Stellaria holostea*). Ash and sessile oak standards are also supported within this hedgerow. Offsite hedgerow **H4** is essentially a continuation of hedgerow **H3**, with ground flora including great willowherb (*Epilobium hirsitum*) and bittersweet (*Solanum dulcamara*), in addition to tutsan (*Tutsan Hypericum androsaemum*), male fern, lady fern (*Athyrium filix-femina*) and common polypody (*Polypodium vulgare*).

3.21 Hedgerow **H5**, forming the south-eastern boundary of field **F3**, comprises a short, defunct and unmanaged hedgerow sat atop a dilapidated stone bank. Averaging circa 12m in height, this hedge is typically narrower than 2m and has sparse ground flora largely restricted to common grasses, occasional ferns and foxglove (*Digitalis* spp.). Hedgerow **H6**, forming the southern boundary of field **F2**, occurs on a low and fairly denuded stone bank supporting predominantly semi-mature sessile oaks. Ground flora is poor, comprising grasses, ivy, occasional common ferns, foxglove and a small quantity of bluebell.

3.22 More generally, hedgerow woody species diversity is generally low; however, the associated non-woody flora can be diverse where it is not exposed to grazing cattle. Hedgerow management is also mostly absent, with exception to hedgerow **H3** and **H4** forming the southern and south-western boundaries of field **F3** and field **F5** respectively, aligning the northern side of an access track to a farm. In addition, hedgerow **H7** forming the eastern boundary of field **F5** and supporting willow, sessile oak, downy birch, hazel, ash and rowan, is also subject to management through laying or coppicing, averaging circa 4m-5m in height. Overall, therefore the diversity of hedgerow structure across the Application Site is considerable, ranging from recently laid or coppiced, through to those no longer functioning as a hedgerow but now merely forming the edge of an area of woodland or dense scrub.

3.23 Hedgerows are considered a priority habitat have potential to support a number of protected and notable species. As such, hedgerows supported by the Application Site are considered to be of importance at the **Local** level.

3.24 Additionally, in respect of the 'importance' of those hedgerows **H1** – **H7** assessed in accordance with the Wildlife and Landscape criteria of the Hedgerows Regulations 1997, hedgerows **H3**, **H4**, **H6** and **H7** are considered important due to their species diversity, intactness and presence of banks (**Appendix EDP 5**).

Other Notable Boundaries

3.25 **H8**, comprising the southern boundary of field **F5**, comprises a circa 2m tall stone revetment abutting a steep bank, supporting a broad, unmanaged hedgerow dominated by mature and semi-mature sycamore (*Acer pseudoplatanus*). Some ash, rowan, holly, hazel and hawthorn is also present, along with sparce bramble. The field layer is otherwise poor, dominated by ivy. On the face of the revetment there is a relatively rich ground flora, including harts-tongue fern (*Asplenium scolopendrium*), maidenhair

spleenwort (*Asplenium trichomanes*), hard shield fern (*Polystichum aculeatum*) and narrow buckler fern (*Dryopteris carthusiana*).

3.26 Boundary **H9** forming the eastern boundary of field **F2** is essentially a continuation of hedgerow **H6**, occurring on a low, denuded stone bank and supporting predominantly semi-mature sessile oaks but forming a narrow, wooded gully rather than hedgerow *per se.*

Poor Semi-improved Grassland

3.27 Field **F3** supports poor, semi-improved grassland dominated by common bent (*Agrostis capillaris*), sweet vernal grass (*Anthoxanthum odoratum*) and Yorkshire fog (*Holcus lanatus*). Other species frequently recorded include crested dogstail (*Cynosaurus cristatus*), meadow buttercup (*Ranunculus acris*), creeping buttercup (*Ranunculus repens*), red clover (*Trifolium pratense*) and white clover (*Trifolium repens*). Soft rush (*Juncus effusus*) is otherwise locally frequent, but generally the field is relatively dry and largely lacking species indicative of a high water table.

3.28 The southern half of field **F5** also supports poor, semi-improved grassland, with both fields **F3** and **F5** considered to comprise species poor MG10a *Holcus lanatus-Juncus effuses* rush pasture typical sub-community. Both fields are subject to grazing by cattle.

3.29 Species recorded within poor semi-improved grassland habitat are provided at **Appendix EDP 4**. More generally, poor semi-improved grassland present onsite is considered to be of limited ecological value and thus of importance at the **Site** level only due to its low species and structural diversity.

Semi-improved Grassland & Marshy Grassland

3.30 A roughly central band of coarse, unmanaged marshy grassland habitat occurs across field **F1**, intergrading with tall herb vegetation and unmanaged, semi-improved grassland dominated by false oat-grass (*Arrhenatherum elatius*) and Yorkshire fog. Black knapweed (*Centaurea nigra*) is locally common, whilst soft rush and greater bird's-foot trefoil (*Lotus pedunculatus*) are abundant. Marsh bedstraw (*Galium palustre*), wild angelica (*Angelica sylvestris*), compact rush (*Juncus conglomeratus*), and marsh thistle (*Cirsium palustre*) are also present, along with small populations of flag iris (*Iris pseudacorus*) and reed canary-grass (*Phalaris arundinacea*).

3.31 The very disturbed nature of field **F1** and the relatively recent origins of many of the plant communities here make it difficult to ascribe the more distinct communities to those described within the NVC. However, the marshy grassland appears to have some resemblance to a form of the M23b *Juncus effusus/acutiflorus-Galium palustre* rush-pasture *Juncus effusus* sub-community.

3.32 Field **F2** onsite and the northern half of field **F5** also primarily supports marshy grassland habitat subject to grazing by cattle.

3.33 **F2** is mostly dominated by species-poor marshy grassland (rush-pasture). There is, however, botanical interest in a shallow dry and narrow ditch which cuts north westwards across the field. Species recorded here include marsh bedstraw (*Galium palustre*); water pepper (*Persicaria hydropiper*); common valerian (*Valeriana officinalis*); meadowsweet (*Filipendula ulmaria*) and greater bird's-foot trefoil. Most of these species are also recorded within the far southern corner of this field which was noted to be heavily waterlogged at the time of the survey, with brooklime (*Veronica beccabunga*) and sweet-grass species (*Glyceria* spp.) are locally common.

3.34 The northern half of field **F5** also supports species-poor marshy grassland, although there a more diverse sward occupies its far north-eastern corner where some devil's-bit scabious (*Succissa pratensis*) is recorded along with yellow pimpernel, square-stemmed St John's-wort (*Hypericum tetrapterum*) and a violet (*Viola sp.*) species.

3.35 The majority of marshy grassland habitat supported within fields **F2** and **F5** approximates to a species poor MG10a *Holcus lanatus-Juncus effusus* rush-pasture typical sub-community. However, the shallow ditch feature within field **F2**, in addition to the far north-eastern corner of field **F5**, supports a sward more characteristic of the M23b *Juncus effuses/acutiflorus - Galium palustre* rush-pasture *Juncus effusus* sub-community. The far southern corner of field **F2** resembles a disturbed version of the same M23b community.

3.36 Species recorded within semi-improved and marshy grassland habitats are provided at **Appendix EDP 4**. Limited in species diversity and ecological value, such habitats are considered to be of importance at the **Site** level.

Watercourses

3.37 An unnamed stream flows westwards along the northern boundary of the Application Site and comprises a brisk flowing watercourse running in a straight channel that is relatively narrow (2m wide) and variable in depth. The stream would appear to be canalised, with downstream sections characterised by artificial, concrete banking, in contrast to a broad, sinuous section noted across its eastern extent offsite to the east of the Application Site. The banks of the stream are earthen here, whilst the channel bed is a mix of silt, gravel and larger rocks; the stream itself comprises mostly riffles and was approximately 10cm deep at the time of survey.

3.38 The banks of the stream located adjacent to the northern boundary of field **F1** are relatively open and not obscured by woody vegetation. Sections further east are, however well-vegetated with both woody and non-woody species, with over shading suppressing a diverse macrophyte community along the watercourse here. Marginal vegetation along its banks include species such as hemlock water-dropwort (*Oenanthe crocata*), pendulous sedge (*Carex pendula*), fool's water cress (*Apium nodiflorum*) and great willowherb (*Epilobium hirsutum*). There is also a rich diversity of common herb and grass species along with much bramble. Stands of Japanese knotweed are common on the northern bank of this stream. The southern bank of the stream, as it flows along the northern boundaries of onsite field **F1** and offsite field **F7** however, is subject to poaching

by cattle, whilst other sections beyond have been eroded and undercut during periods of fast flow.

3.39 A ditch/gully also runs along the north eastern boundary of field **F1** and eastern boundary of field **F3**. This continues north and joins the stream forming the northern boundary of the Application Site. During periods of higher rainfall it is likely that this ditch will contain water but at the time of survey the bed of the ditch/gully only supported a narrow and shallow band of mud.

3.40 Watercourses comprise priority habitats and are thus considered to be of importance at the **Local** level.

Buildings

3.41 A number of built structures occur within the Application Site in association with the allotment area and far southern end of field **F4**. Structures comprise sheds, small barns and animal pens.

3.42 Built structures within the Application Site are considered to be of negligible importance *per se*.

Hardstanding

3.43 The north-western corner of field **F1** comprises a demolished club house, its surrounding car park and areas of hardstanding. A low bund of rubble with soil is present here, with a larger mound of crushed masonry to its east.

3.44 Areas of hardstanding and rubble/spoil are considered to be of negligible importance *per se.*

Summary of Habitat Types

3.45 A summary and qualitative assessment of those habitats assessed on and immediately adjacent to the Application Site is provided in **Table EDP 3.3**.

Table EDP 3.3: Summary of habitats within the Application Site.

Habitat or feature	Distribution within Application Site	Intrinsic ecological importance	Potential/confirmed value to protected species				
			Species	Breeding	Foraging	Refuge	Dispersal
Allotments	Located across the northern half of field **F4.**	**Negligible**, owning to its low distinctiveness and limited extent.	Birds		●		
			Badger		●		
			Reptiles		●		

Habitat or feature	Distribution within Application Site	Intrinsic ecological importance	Potential/confirmed value to protected species				
			Species	Breeding	Foraging	Refuge	Dispersal
Broadleaved Woodland	Block of woodland present across the southern half of field **F4** and along the south western boundary of field **F1**.	**Local**, being a priority habitat.	Birds	●	●	●	●
			Badger	●	●	●	●
			Bats	●	●		●
			Dormouse		●		●
Dense Continuous Scrub	Dominant habitat type across field **F1**.	**Site**, being of limited diversity and extent.	Birds	●	●	●	●
			Badger		●	●	
			Bats		●		●
			Dormouse		●		●
			Reptiles			●	●
Hedgerows	Forming boundaries of fields onsite.	**Local**, being a priority habitat. Hedgerows **H3**, **H4**, **H6** & **H7** considered 'important.	Birds	●	●	●	●
			Badger		●	●	●
			Bats		●	●	●
			Dormouse	●	●	●	●
			Reptiles	●	●	●	●
Buildings	Limited to sheds and other outbuildings associated with the allotment and smallholding within field **F4**.	**Negligible** *per se*.	Bats		●		●
Poor Semi-improved grassland	Present across onsite field **F3** and southern half of field **F5**.	**Site**, due to low species and structural diversity.	Birds		●		●
			Badger		●		●
			Bats		●		●
			Reptiles		●		●
Semi-improved and Marshy grassland	The north-eastern fields of F1 and **F2**.	**Site,** due to low distinctiveness and common occurrence of such habitats within the locality.	Birds		●		●
			Badger		●		●
			Bats		●		●
			Reptiles		●		●
Watercourses	Forming the northern boundary of the Application Site.	**Local**, being a priority habitat.	Birds		●		●
			Bats		●		●
			Otter				●
			Water Vole		●		●
			Reptiles		●		●

3.46 As noted within **Table EDP 3.3**, the vast majority of habitats comprising the Application Site are considered to be of negligible value or of importance at the **Site** level only. However priority habitats located onsite, including areas of woodland and the hedgerow

network supported, in addition to the watercourse aligning the northern boundary of the Application Site are considered to be of importance at a **Local** Level *per se*. Such habitats have the potential to support a range of protected and notable species however, as discussed further below.

Protected and/or Notable Species

3.47 The likelihood of presence, or confirmed presence, of protected/and or notable wildlife species within the Application Site is summarised below with reference to desk study records, habitat suitability and detailed surveys where relevant. Further details are made available within appendices and plans where referenced.

3.48 Where a particular species or taxonomic group has been confirmed to be present, or presence is inferred based on habitat suitability, the ecological value or significance of the population or assemblage is assessed on a geographical scale.

Breeding Birds

3.49 Several records of bird species were returned within 2km of the Application Site by SEWBREC during the desk study, including Schedule 1 species listed under the Wildlife and Countryside Act 1981 (as amended) such as redwing (*Turdus iliacus*), goshawk (*Accipiter gentilis*), hen harrier (*Circus cyaneus*), red kite (*Milvus milvus*), merlin (*Falco columbarius*), peregrine (*Falco peregrinus*), barn owl (*Tyto alba*), fieldfare (*Turdus pilaris*) and crossbill (*Loxia curvirostra*). The following red listed bird species of conservation concern for the Wales[23] were also identified within 2km of the Application Site: starling (*Sturnus vulgaris*), cuckoo (*Cuculus canorus*), curlew (*Numenius arquata*), lapwing (*Vanellus vanellus*) and bullfinch (*Pyrrhula pyrrhula*). Amber listed species include song thrush (*Turdus philomelos*) and house sparrow (*Passer domesticus*).

3.50 Boundary features onsite are considered to provide suitable cover and a foraging resource to a common and generalist assemblage of breeding birds, in addition to offering breeding opportunities during the breeding season. The Application Site is therefore considered to be of **Site** level importance with respect to its potential to support common and widespread bird species.

Badger

3.51 SEWBReC returned 3 records of badger within the last 10 years, the closest return being approximately 1.1km north-west of the Application Site. No records for badger setts were returned by SEWBReC during the desk study.

3.52 During the initial Extended Phase 1 survey visit completed in August 2019 no active badger sett or signs of badger were identified. Additionally, no further evidence of activity was observed during subsequent survey visits. Nevertheless the Application Site offers

[23] Bladwell S, Noble DG, Taylor R, Cryer J, Galliford H, Hayhow DB, Kirby W, Smith D, Vanstone A, Wotton SR (2018) *The state of birds in Wales 2018.* The RSPB, BTO, NRW and WOS. RSPB Cymru, Cardiff.

good foraging and dispersal opportunities for this species, in the form of grassland fields and scrub/woodland edge habitats. Sett building opportunities are however confined to areas of drier ground which are limited in extent.

3.53 Given their opportunistic nature and likely presence within the wider landscape, the Application Site is considered to be of importance to this species at the **Site** level.

Bats

Desk Study

3.54 SEWBReC returned three records of roosting bats within a 2km radius of the Application Site, including Natterer's bat (*Myotis nattereri*), common pipistrelle (*Pipistrellus pipistrellus*) and soprano pipistrelle (*Pipistrellus pygmaeus*) bat roosts, all of which were recorded circa 1km to the north-west of the Application Site, in association with a farmhouse.

3.55 With respect to Annex II species, two records of lesser horseshoe (*Rhinolophus hipposideros*) and greater horseshoe (*Rhinolophus ferrumequinum*) bat were returned in relation to Taff-Ely Windfarm, southwest of the Application Site. Records of lesser horseshoe bats were also recorded circa 3.4km away, whilst greater horseshoes were recorded approximately 3.1km and 3.6km away from the Application Site.

3.56 Multiple records of foraging/commuting bats were also recorded within the wider area, the closest to the Application Site being a common pipistrelle along the north-western boundary of the Application Site. Records of noctule bat (*Nyctalus noctula*) were also returned for the wider area.

Investigations of Bat Roosting – Trees

3.57 The initial ground level bat roost assessment undertaken in August 2019 of trees within the Application Site identified four mature trees as having high potential to support roosting bats (bat trees **T1**, **T3**, **T31** and **T40**), with a further 25 trees having moderate bat roost potential (bat trees **T7, T8**, **T12, T13**, **T16**, **T17** – **T21**, **T24** – **T28**, **T30**, **T34**, **T36**, **T39**, **T41**, **T43**, **T44**, **T46**, **T47** and **T51**), as illustrated on **Plan EDP 4a**.

3.58 A further three aerial climbing inspections were therefore completed to reconfirm the bat roosting potential of those trees identified during the preliminary ground level assessment. Aerial inspections completed during September 2019, October 2019 and January 2020, to enable the inspection at height of those potential roost features previously identified from the ground, reconfirmed three bat trees, **T12, T17** and **T26**, as having high potential to support roosting bats. A further six bat trees, **T8**, **T13, T18**, **T20**, **T39** and **T51**, are considered to have moderate potential to support roosting bats. Bat trees **T19**, **T21**, **T31, T34**, **T40** and **T46** were downgraded or reconfirmed as having low potential to support roosting bats.

3.59 A summary of the findings of the aerial climbing inspections are provided in **Appendix EDP 6**, with bat tree locations illustrated within **Plan EDP 4b**.

Investigations of Bat Foraging/Commuting Activity

3.60 Bat foraging and commuting activity recorded during the course of the transect and automated detector surveys undertaken between August to October 2019 and April to May 2020 are illustrated in **Plans EDP 9a – 9e**. The following should be read in conjunction with these plans. Full results are provided within **Appendix EDP 6**.

Species Diversity and Abundance

3.61 Over eight species of bat (*Myotis* and *Plecotus* species were not always identified to species level) were confirmed to be foraging and/or commuting within the Application Site during the surveys. During the automated detector surveys, the vast majority of this behaviour (93.10% of Anabat recordings) related to common pipistrelle bats with a further 3.44% relating to soprano pipistrelle (collectively 96.54% of all calls recorded). Lesser horseshoe followed with 1.58% and *Myotis sp*. with 1.41% of all Anabat registrations recorded. Remaining bat species, including Nathusius' pipistrelle (*Pipistrellus nathusii*), noctule, serotine (*Eptesicus serotinus*) and long-eared (*Plecotus sp*.) bat totalled less than 1% of the total number of bat registrations recorded, as further summarised within **Table EDP 3.4**.

Table EDP 3.4: Summary of findings.

Bat Species	Number of Bat Passes Recorded per Anabat per Deployment Period					Total	% of Total
	August 2019 (A/B)	September 2019 (C/D)	October 2019 (E/F)	April 2020 (G/H)	May 2020 (I/J)		
Common pipistrelle	23/ 106	684/639	170/ 261	1239/ 1912	2429/539	8263	**93.10**
Noctule	1/0	2/4	1/9	1/2	3/0	20	**0.23**
Serotine	0/0	2/0	1/0	0/0	1/1	5	**0.06**
Soprano pipistrelle	4/8	59/58	12/15	13/66	35/14	305	**3.44**
Myotis sp.	0/2	39/7	24/2	17/17	13/0	125	**1.41**
Lesser horseshoe	0/0	1/10	0/1	21/21	84/1	140	**1.58**
Long-eared bat	0/0	0/0	0/0	10/0	3/3	13	**0.15**
Nathusius pipistrelle	0/0	0/0	0/0	0/0	3/0	3	**0.03**
*Nyct*alus sp./ Eptesicus sp.	0/0	0/0	0/0	0/0	0/1	1	**0.01**
Total	**28/ 116**	**787/718**	**208/ 288**	**1301/ 2018**	**2571/ 559**	**8875**	**100**

3.62 More generally, bat foraging activity levels were mainly associated with woodland edges and hedgerows. A summary of each species/species group utilising the Application Site and wider survey area is provided below.

Common and Soprano Pipistrelle

3.63 Common and soprano pipistrelle recordings were by far the most frequent and most widely distributed across the Application Site during both the transect and automated detector surveys. Highest levels of activity were observed in association with Anabat locations **C** and **D** adjacent to secondary broadleaved woodland habitat across field **F4**, and in association with a belt of scrub offsite to the east of field **F2**.

3.64 Common pipistrelle bats are common and widespread across the UK, representing the most abundant species in the UK respectively. Whilst having suffered significant historic declines, national population monitoring[24] indicates that their populations have increased since 1999.

3.65 Soprano pipistrelle bats are widely distributed across the UK. Whilst this species has suffered significant historic declines, population monitoring[25] indicates that this species has been stable nationally since 1999.

3.66 Common and soprano pipistrelle bats were found to be the dominant species utilising the Application Site, accounting for 96.54% of all calls recorded. The Application Site is therefore considered to be of importance to these species at the **Local** level.

Myotid Bat Species

3.67 Species of Myotid bat were recorded across nearly all of the Anabat sampling locations, excluding location **A** located offsite to the north-east. The number of recordings were highest at location **C** located adjacent to secondary broadleaved woodland within the south-western corner of the Application Site. During the transect surveys Myotid bats were recorded using southern boundary hedgerows **H3**, **H4** and **H8**.

3.68 Myotid bat species occur throughout most of the UK, their populations considered to be either stable or increasing[26]. Myotid bat passes accounted for 1.41% of total registrations. The Application Site is therefore considered to be of importance to this species group at a **Site** Level only.

[24] Bat Conservation Trust, 2018. The National Bat Monitoring Programme. Annual Report 2017. Bat Conservation Trust, London.
[25] Bat Conservation Trust, 2018. The National Bat Monitoring Programme. Annual Report 2017. Bat Conservation Trust, London.
[26] Bat Conservation Trust, 2018. The National Bat Monitoring Programme. Annual Report 2017. Bat Conservation Trust, London.

Long-eared

3.69 Long-eared bats were recorded on only two occasions during the August 2019 transect survey, utilising hedgerow **H3** forming the southern boundary of field **F3**, as well as in association with the stream along the north boundary.

3.70 Brown long-eared bat is found throughout the UK, its populations considered to remain stable nationally[27]. Brown long-eared bat registrations were only recorded occasionally during the surveys, accounting for 0.15% of recordings. The Application Site is therefore considered to be of importance to this species group at a **Site** Level only.

Serotine

3.71 Serotine bat was not recorded during the transect surveys, although registrations were recorded by automated detectors located adjacent to secondary woodland occupying the south-western corner (Anabat location **C**) and along the north-eastern boundary (Anabat location **I**), as well as offsite to the south-east (Anabat location **E**).

3.72 Serotine bats are restricted to southern England and Wales where they are widespread, but scarce, albeit populations are stable nationally. Serotine bat passes accounted for 0.06% of total registrations. The Application Site is therefore considered to be of importance to this species at a **Site** Level only.

Noctule

3.73 Noctule bats were encountered throughout the automated detector surveys, with the highest number of registrations recorded during October 2019, in association with the eastern corner of the Application Site (Anabat location **F**). The widespread distribution of recordings made and absence of obvious commuting routes is considered likely to reflect this species' tendency to fly directly to foraging sites and forage at height.

3.74 Noctule bat is widespread across the UK, with its population and range considered to remain stable in the UK[28]. Accounting for only 0.23% of total registrations, the Application Site is considered to be of importance to this species group at a **Site** Level.

Lesser Horseshoe

3.75 Lesser horseshoe bat was recorded passing over the Application Site during the transect surveys undertaken during August 2019, April 2020 and May 2020, in association with the eastern boundary of the Application Site. Further registrations were also recorded by automated detectors during September 2019 in association with broadleaved woodland habitat located within the far south-western corner of the Application Site (Anabat location **C**) and scrub habitat offsite to the east (Anabat location **D**). A further registration

[27] Bat Conservation Trust, 2018. The National Bat Monitoring Programme. Annual Report 2017. Bat Conservation Trust, London.
[28] Bat Conservation Trust, 2018. The National Bat Monitoring Programme. Annual Report 2017. Bat Conservation Trust, London.

was recorded during October 2019, again in association with the eastern boundary of the Application Site (Anabat location **F**).

3.76 Lesser horseshoe bat is a rare and endangered species in the UK and predominantly confined to the south-west of England and south Wales, though its population status is understood to be increasing[29]. Accounting for circa 1.58% of total registrations, the Application Site is considered to be of importance to this species group at the **Local** Level.

Nathusius' pipistrelle

3.77 Nathusius' pipistrelle was recorded on a single occasion during the April and May 2020 transect surveys in association with the eastern and northern boundaries of the Application Site. A further three registrations were also recorded by the automated detector positioned along the eastern boundary (Anabat location **I**) during May 2020.

3.78 Nathusius' pipistrelle is considered rare in the UK, though records have increased in recent years and they are considered relatively widespread throughout the UK. Maternity colonies have been discovered in Kent and Northumberland[30], whilst records from Wales are mainly from sporadically recorded bats in flight. Registrations of Nathusius' pipistrelle account for only 0.03% of total recordings; as such, the Application Site is considered to be of importance to this species at the **Site** Level.

Evaluation of Overall Assemblage

3.79 The abundance and diversity of bat species recorded onsite is considered to be typical of livestock-grazed farmland in Wales, with common and widespread generalist species such as common and soprano pipistrelle bats accounting for the vast majority of foraging and commuting activity (95.54% collectively). Occasional passes of rarer species were recorded to occasionally utilise the Application Site however, including lesser horseshoe, Nathusius' pipistrelle and serotine.

3.80 Overall therefore, the Application Site is considered to be of importance to the local bat assemblage at the **Local** level.

Dormouse

3.81 No records for dormouse were returned by SEWBReC during the desk study. However, the continuous network of hedgerows located onsite and their connectivity to the large woodland habitat located offsite and across the wider landscape are considered to offer some foraging and dispersal opportunities to this species should they be present within the wider landscape.

[29] Bat Conservation Trust, 2018. The National Bat Monitoring Programme. Annual Report 2017. Bat Conservation Trust, London.

[30] Bat Conservation Trust – Nathusius' pipistrelle fact sheet: http://bats_new.brix.fatbeehive.com/pages/nathusius_pipistrelle.html

3.82 Nest tube surveys undertaken over the course of 2019 and 2020 did not confirm the presence of dormouse. Evidence of wood mouse (*Apodemus sylvaticus*) was, however, relatively widespread, including the presence of individuals, their nests and food caches.

3.83 Dormouse is therefore not considered to pose a constraint to the development proposals and are thus not considered further within this report.

Great Crested Newt

3.84 No great crested newt records were returned within a 2km radius of the Application Site over the last ten years. However records for common amphibian species were returned, including: 11 records for common frog (*Rana temporaria*), 10 for common toad (*Bufo bufo*) and twenty for palmate newt (*Lissotriton helveticus*).

3.85 Two potential waterbodies were identified within 500m of the Application Site, including one pond situated circa 120m to the south, and a second pond located circa 390m to the south. A site visit to these features during April 2020 however confirmed neither of them to exist however, with the closer feature found to comprise a spring/ditch, the second being located within a private property and thus inaccessible, but unable to be located following a review of aerial photography.

3.86 Great crested newt is therefore not considered to pose a constraint to the development proposals and are thus not considered further within this report.

Otter and Water Vole

3.87 A desk study returned no records for water vole (*Arvicola amphibius*). Five records for otter (*Lutra lutra*) were received however, the closest of which was located approximately 1.9km south-west of the Application Site, comprising a spraint recorded on top of a ditch plank bridge.

3.88 During the Extended Phase 1 survey on 08 August 2019 an old otter spraint was recorded in association with the section of stream aligning the northern boundary of the offsite field **F7**, deposited upon a rock circa 80m east of the Application Site. Further detailed water vole and otter surveys were therefore undertaken in September 2019 and April 2020.

3.89 The short section of watercourse flowing westwards along the northern boundary of field **F1** comprising the Application Site is relatively open, with marginal vegetation including species such as hemlock water-dropwort, pendulous sedge, fool's water cress and great willowherb providing a potential foraging resource for water vole, albeit limited in diversity. The remainder of the watercourse is otherwise well-vegetated with scrub, thereby supressing the establishment of a diverse macrophyte community along its eastern sections as a result of over shading. In terms of burrowing opportunities for this species, earth banks are present; however, the southern bank of the watercourse is subject to poaching by cattle, with sections also subject to erosion and undercutting by fast flowing water. Additionally, downstream sections are characterised by artificial,

concrete banking. Overall therefore, the stream is considered sub-optimal to a water vole population.

3.90 No evidence of water vole including latrines, feeding signs and burrows was identified during the Extended Phase 1 survey or during the further detailed surveys undertaken in April and September 2020. Of further note, the watercourse is culverted under existing development immediately downstream (west) of the Application Site, considered a significant barrier to the dispersal of this species. Upstream the watercourse issues from a spring circa 500m east of the Application Site. Given the sub-optimal nature of the watercourse for water vole combined with the absence of any connectivity with suitable habitat in the wider landscape, this species is thus presumed absent and not considered further in this report.

3.91 In respect of otter, scrub vegetation which has colonised the banks of the watercourse offers suitable cover for this species. Given the size (width and depth) of the stream compounded with the presence of a culvert downstream, likely to pose a barrier to the movement of fish populations upstream, it is unlikely that the watercourse supports a significant fish population and, therefore, is considered a sub-optimal foraging resource for otter.

3.92 Detailed surveys of the stream undertaken in April and September 2020 did not identify any holts/resting places in active use by otter although there is suitable cover for this species. However, a single otter spraint was identified along the northern boundary watercourse circa 80m east of the Application Site during the Extended Phase 1 survey in August 2019, with a second otter spraint identified in a similar location during the further detailed otter survey completed in September 2020. A further two, old, dry spraints were also identified here during April 2020 in addition to a rat carcass which may have been feeding remains. The usage of the northern boundary watercourse by otter for commuting and dispersal purposes is therefore assumed, with this species considered to be of **Local** level importance.

Common Reptiles

3.93 SEWBReC returned only one record for grass snake (*Natrix natrix*) approximately 1.2km north-east from the Application Site. Sixteen records for common lizard (*Zootoca vivipara*) were also returned, the closest being located approximately 1.3km to the south of the Application Site. A further three records for adder (*Vipera berus*) were also returned, the closest located at approximately 2.4km to the south-west. No records were returned for slow-worm (*Anguis fragilis*).

3.94 During the 2019 surveys, a maximum of 19 slow-worm individuals and 2 common lizard individuals were recorded within field **F1**, with a further 2 common lizard individuals also recorded within an offsite field to the immediate east, as further detailed within **Table EDP 3.5** and illustrated within **Plan EDP 7**.

Table EDP 3.5: Reptile survey results, 2019.

Visit & Date	Reptile Species							Incidental Sightings
	Common Lizard			Slow-worm				
	Adult	Juvenile	Max. Count	Adult Female	Adult Male	Juvenile	Max. Count	
1: 05.09.19	1	-	1	2	2	8	12	One palmate newt, two voles and one shrew
2: 10.09.19	1	-	1	2	4	13	19	Common lizard skin found
3: 13.09.19	1	-	1	4	-	7	11	-
4: 17.09.19	-	-	-	4	-	7	11	-
5: 25.09.19	4	-	4	3	1	4	8	-
6: 28.09.19	-	-	-	2	1	6	9	-
7: 30.09.19	-	-	-	-	-	3	3	-

3.95 Whilst a full population size assessment was not undertaken, given the relatively small numbers of common lizard recorded over the course of the survey visits, it is considered that no greater than a low population of this species is supported by the Application Site[31,32]. In respect of slow-worm, a low to medium[33]/good[34] population of this species is supported by the Application Site.

3.96 The distribution of common lizard and slow-worm are considered to be relatively widespread in Wales[35]. As such, the Application Site is considered to be of Site Level importance to this species group.

Invertebrates

3.97 The desk study returned records of small pearl-bordered fritillary buttefly (*Boloria selene*) and marsh fritillary butterfly approximately 1.3km to the east and north-west of the Application Site respectively. In respect of the latter species, Rhos Tonyrefail SSSI, encompassing several discrete units scattered across the wider landscape, the closest of which is located circa 100m east of the Application Site, is of special interest for its

[31] Froglife (1999) *Reptile survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation*. Froglife Advice Sheet 10, Froglife, Halesworth.

[32] Herpetofauna Groups of Britain and Ireland (1998). *Evaluating Local Mitigation/Translocation Programmes: Maintaining Best Practice and Lawful Standard*s. HGBI Advisory Notes for Amphibian and Reptile Groups (ARGs).

[33] Herpetofauna Groups of Britain and Ireland (1998). *Evaluating Local Mitigation/Translocation Programmes: Maintaining Best Practice and Lawful Standard*s. HGBI Advisory Notes for Amphibian and Reptile Groups (ARGs).

[34] Froglife (1999) *Reptile survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation*. Froglife Advice Sheet 10, Froglife, Halesworth.

[35] BTO (2011). *Research Report No.572: An examination of reptile and amphibian population sin gardens, the factors influencing garden use and the role of a 'Citizen Science' approach for monitoring their populations within this habitat.* BTO.

populations of marshy fritillary. In addition, records of grasshopper warbler (*Locustella naevia*) were returned approximately 1.4km north-west, in addition to records of brown-banded carder-bee (*Bombus humilis*), approximately 1.5km south of the Application Site.

3.98 The initial habitat suitability assessment undertaken of the Application Site for marsh fritillary butterfly recorded suitable areas of marshy grassland across the Application Site within fields **F1** and **F2**, as well as across fields **F5**, **F6** and **F7** to the immediate east of the Application Site. Of these areas, offsite fields **F6** and **F7** were confirmed support occurrences of Devil's-bit scabious, the food plant of marsh fritillary butterfly. Devil's-bit scabious was otherwise largely absent from the Application Site itself.

3.99 No larval webs nor the larvae of marsh fritillary were identified during the field survey, however. Nevertheless, this species is known to exist in metapopulations subject to large fluctuations in population size such that their occupation of any one site may vary year on year. Given the abundance of its food plant occurring across offsite field **F7**, there is the potential for marsh fritillary butterfly to have occupied this offsite field in past, or indeed in future years, given that this With respect to **F2**, however, given the absence/limited occurrence of devil's-bit scabious, this field is considered to be of limited importance of a marsh fritillary population.

3.100 Specific to the Application Site however, given the absence of evidence of this species occurring within suitable habitats immediately adjacent to the Application Site, alongside the absence of its food plant occurring onsite, marsh fritillary butterfly are not considered likely to be supported by the Application Site.

Other Mammals

3.101 SEWBReC returned nine records for European hedgehog (*Erinaceus europaeus*) during the desk study, mainly seen crossing roads, with the closest record being located approximately 600m north of the Application Site. A single record for stoat (*Mustela erminea*) was also returned, just under 2km away.

3.102 Habitats supported by the Application Site and wider survey area, namely woodland and hedgerow boundaries, are considered to provide some cover for these species.

Notable Plants

3.103 The desk study returned eight records for bluebell (*Hyacinthoides non-scripta*), a species listed on Schedule 8 of the Wildlife and Countryside Act 1981 (as amended) the closest in association with woodland 375m south of the Application Site. Also returned was annual knawel (*Scleranthus annuus*), a priority species, located circa 1.4km north-east of the Application Site. With exception to bluebell, associated with woodland and hedgerow habitats onsite, no other notable plant species were recorded for the Application Site itself.

Summary of Key Issues Arising from Survey Findings

3.104 Based on the survey findings described above, the key ecological features/receptors pertinent to the development proposals are as follows:

Table EDP 3.5: Key ecological features pertinent to the development proposals.

Receptor	Key Attributes	Nature Conservation Importance
Designations		
Rhos Tonyrefail SSSI	100m to the east of the Study Area at its closest point. A network of seven groups of fields scattered around Tonyrefail. Large lowland site of special interest for its marshy grassland, acid flush, species-rich neutral grassland, acid grassland, wet heath and blanket mire. Also, of interest is its population of marsh fritillary butterfly.	**National**
Habitats		
Broadleaved woodland	A block of woodland is present within the southern end of field **F4**, in addition to a belt of woodland forming the south-western boundary of field **F1**. Woodland habitat onsite is of low botanical interest and exhibits poor structure. Comprises a priority habitat. Supports trees with bat roost potential. Also offers suitable breeding, foraging and dispersal habitat for breeding birds and other wildlife.	**Local**
Hedgerows	Hedgerow network on and adjacent to the Application Site comprise a priority habitat. Hedgerows **H3**, **H4**, **H6** & **H7** considered 'important'. Provides a linear feature for the dispersal of wildlife including bats, breeding birds, reptiles and badger.	**Local**
Dense continuous scrub	Dominant habitat across field **F1**. Supports a population of slow-worm and common lizard. Offers suitable breeding, foraging and dispersal habitat for breeding birds and other wildlife.	**Site**
Poor semi-improved, grassland	Dominant habitat within field **F3** subject to grazing. Species poor and exhibiting poor structural diversity.	**Site**
Poor semi-improved, semi-improved and marshy grassland	A small area of semi-improved and marshy grassland habitat occurs within field **F1**, forming a mosaic with dense scrub habitats adjacent. Marshy grassland dominates field **F2** and is generally species-poor, although localised areas exhibiting greater botanical interest occurs in the form of a linear ditch across its northern half, and a waterlogged area within its far southern corner. Subject to grazing. Offers suitable foraging and dispersal habitat for wildlife including breeding birds, badger and common reptiles.	**Site**

Receptor	Key Attributes	Nature Conservation Importance
Watercourse	Stream aligning the northern boundary of the Application Site is a priority habitat and provides a linear feature for the dispersal of wildlife within the wider landscape such as otter. Ditches aligning the eastern boundary of the Application Site likely flow into stream when wet.	**Local**
Species		
Badger	An opportunistic and widespread species, potentially utilising the Application Site for foraging and dispersal.	**Site**
Bats	Trees with roosting potential onsite. Habitats onsite also support the local bat population foraging and commuting across the Application Site to the wider landscape.	**Local**
Breeding bird assemblage	Generalist bird assemblage likely supported by the hedgerow network and areas of woodland and scrub during the bird breeding season.	**Site**
Otter	Likely utilising the stream aligning the northern boundary of the Application Site as a commuting corridor.	**Local**
Common reptiles	A low population of common lizard and low to medium/good population of slow-worm are likely supported by the Application Site, utilising the scrub and grassland mosaic habitat within field **F1**.	**Local**

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Section 4
Details of Proposed Development

4.1 Having reviewed the baseline conditions, this section of the Ecological Appraisal provides pertinent details of the proposed development, in particular those aspects which have potential implications for the ecological features/receptors identified in **Section 3**. Where relevant, reference is made to the influence that ecological considerations have had in the scheme's design and any inherent mitigation which avoids or reduces the severity of potential ecological impacts.

Development Proposals

4.2 A hybrid planning application is proposed for the residential development of up to 120 dwellings and associated works across the Application Site, as follows:

- Full planning consent is sought for the first phase of development, encompassing the entirety of field **F1** measuring circa 1.58ha, to comprise the development of 42 residential dwellings; and

- Outline planning consent is sought for the second phase of development, encompassing fields **F2**, **F3** and **F4** and totalling 2.65ha, with all matters reserved except for access.

4.3 The proposals are illustrated within the detailed site layout prepared for the first phase of development and illustrative masterplan encompassing the second phase of development provided at **Appendix EDP 1**. Site location plans in respect of detailed and outline proposals are provided at **Appendix EDP 2**.

Proposed Habitat Loss

4.4 The Application Site totals 5.16ha. land take associated with the proposed built development, to include residential units, roads and associated infrastructure totals c. 3.68ha, equating to circa 71% of the total Application Site area. The remainder of the Application Site, totalling circa 1.48ha and equating to 29% of its total area, is proposed to accommodate sustainable drainage features (totalling circa 0.16ha) and areas of informal open space (0.39ha), in addition to field **F5** being dedicated as an ecological mitigation area, measuring circa 0.93ha.

4.5 In respect of the first phase of development occupying field **F1** of the Application Site and totalling circa 1.58ha, land take associated with built development, to include residential units, roads and associated infrastructure, totals approximately 1.29ha. The remainder of this first phase is proposed to accommodate a sustainable drainage feature, measuring 0.12ha, in addition to areas of informal open space, totalling 0.17ha.

4.6 Habitats to be lost to facilitate this first phase of development primarily comprise those of limited botanical interest, relating to areas of dense continuous scrub in addition to scattered scrub, tall ruderal and ephemeral/short perennial vegetation occurring across areas of hardstanding and bare ground located at its north-western extent. Such habitats are associated with the footprint of the former, now demolished, club house. However habitats of good ecological value, including a small band of semi-improved and marshy occurring within the centre of field **F1**, a linear belt of secondary woodland arising from former hedgerow boundaries in its south-western corner, and scattered trees along the southern and eastern boundaries, will also be lost. In respect of trees considered to have potential to support roosting bats, bat trees **T17** and **T26** with high potential, in addition to bat trees **T39** and **T51** with moderate potential and bat trees **T31** and **T34** with low potential, as identified on **Plan EDP 4b**, will require removal. Trees/tree groups to be removed to facilitate this first phase of development are further identified within the Arboricultural Impact Assessment Plan and Tree Protection Plan provided at **Appendix EDP 7**.

4.7 In respect of the second phase of development, details are provided in outline only, such that the full extent of losses have yet to be defined. Nevertheless, land take is anticipated to total approximately 2.39ha, together with the provision of sustainable drainage features totalling circa 0.12ha and informal open space totalling circa 0.22ha. The vast majority of habitats supported across fields **F2**, **F3** and **F4** will thus likely require removal to facilitate development, including the loss of marshy grassland habitat comprising field **F2**, poor, semi-improved grassland comprising field **F3**, and broadleaved woodland, scrub habitat, areas of ephemeral/short perennial vegetation and built structures associated with the small holding and allotments located across field **F4**. In respect of trees considered to have potential to support roosting bats, the required removal of the block of broadleaved woodland across field **F4** will result in the loss of bat trees **T18** and **T20** with moderate potential and bat trees **T19** and **T21** with low potential, as identified on **Plan EDP 4b**. Bat trees **T12** with high potential, and bat trees **T8** and **T13** with moderate potential may also be impacted.

Proposed Habitat Gain

Habitat Retention, Protection & Creation

4.8 The sensitive placement of green and blue infrastructure assets across the Application Site has focussed on the peripheries so as to mitigate for impacts upon boundary features and adjacent habitats whilst providing opportunities for the maintenance, strengthening and enhancement of habitat connectivity across the wider landscape.

4.9 Specifically, and in relation to the detailed design for phase 1 development, the development footprint has been offset away from its northern and north-western boundaries through the provision of an attenuation basin and informal public open space. In relation to phase 2 development, albeit illustrative, the proposed development footprint has sought to enable the retention of the vast majority of boundary hedgerows/features **H1**, **H2**, **H3**, **H5**, **H6** and **H9**.

4.10 In compensation for habitat loss necessary to facilitate such development however, development has avoided field **F5** totalling circa 0.93ha, enabling its entirety to be dedicated for ecological mitigation. Whilst its far north-eastern corner supports species-rich marshy grassland, the vast majority of this field comprises poor semi-improved and marshy grassland of low botanical value, thereby offering significant opportunities for biodiversity enhancement. The retention of field **F5** for ecological mitigation will also secure the retention, protection and further enhancement of the hedgerow resource onsite, with species-rich and important hedgerows **H4**, **H6** and **H7** forming the boundaries of this field.

4.11 EDP has provided input during the iterative design process, such that the proposed detailed and illustrative layouts for the Application Site reflect key measures to avoid, mitigate or compensate for ecological impacts as well as other measures designed to provide long-term ecological enhancements. Such measures are discussed further in **Section 5** of this Appraisal.

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Section 5
Predicted Impacts and Mitigation

5.1 This section of the Ecological Appraisal considers the likely impacts of proposed development, included at **Appendix EDP 1**, on the existing ecological resource. Where impacts cannot be avoided by inherent mitigation alone, additional mitigation or enhancement measures are recommended which, if implemented, would as a minimum enable the proposed development to meet legislative and/or planning policy requirements.

5.2 EDP's overall summary and conclusions, based upon the above, are given in **Section 6**.

Designated Sites

Statutory Designations

5.3 Statutory designations receive legal protection under various international and national legislative instruments. This protection is also reflected in policies included within *Planning Policy Wales Technical Advice Note 5: Nature Conservation and Planning* (TAN5), which are given material consideration during the planning application process.

5.4 In addition, the Rhondda Cynon Taff LDP sets out additional policies including Policy AW8 (Protection and Enhancement of the Natural Environment) which generally requires that the distinctive natural heritage be preserved and enhanced by protection it from inappropriate development. Development proposals would only be permitted where there would be *'no unacceptable impact upon features of importance to landscape or nature conservation, including ecological networks, the quality of natural resources such as air, water and soil, and the natural drainage of surface water'.*

International Sites

5.5 Under Article 6 of EC Directive 92/43/EEC (the Habitats Directive) an assessment is required where a plan or project may give rise to significant effects upon any European Site. Natural 2000 is a network of areas designated to conserve natural habitats and species that are rare, endangered, vulnerable or endemic within the European Community. This includes SACs designated under the Habitats Directive for their habitats and/or species of European importance and SPAs classified under Directive 2009/147/ED on the Conservation of Wild Birds for rare, vulnerable and regularly occurring migratory bird species and internationally important wetlands.

5.6 Blackmill Woodlands SAC is located circa 7.3km west of the Application Site, with key vulnerabilities regarding this designation primarily relating to grazing pressure and increased levels of airborne pollution. A Habitat Regulations Assessment (HRA) screening and Appropriate Assessment undertaken of the Rhondda Cynon Taff LDP considered the potential of allocated development to result in significant negative effects to European

sites. However, Blackmill Woodlands SAC was scoped out at the screening stage due to its distance from proposed allocations, with the risk of impacts considered likely to be negligible given the spatial separation of allocated development from the SAC. As such, international designations are not considered likely to pose a constraint to the future development of the Application Site.

National Sites

5.7 With respect to nationally designated sites, four SSSIs are located within 5km of the Application Site. Of these, Llantrisant Common and Pastures, Nant Gelliwion Woodland and Brynna a Wern Tarw SSSIs are situated over 4km away. Given their spatial separation from the Application Site, coupled with the small size and scale of proposed development, no impacts upon these designated sites are predicted.

5.8 In respect of Rhos Tonyrefail SSSI, supporting species-rich, marshy neutral and acid grassland, in addition to important populations of marsh fritillary butterfly, this designation totals over 244ha and comprises a network of seven distinct units, the closest of which is situated circa 100m east of the Application Site. This SSSI unit is, however, separated from the Application Site by agricultural fields adjacent to its north-eastern, eastern and south-eastern boundaries, for which detailed survey work has confirmed the likely absence of marsh fritillary butterfly populations within these adjacent fields and for the Application Site itself.

5.9 In addition, no public rights of way traverse the Application Site to this SSSI; however, an existing right of way is present to the immediate south of the Application Site, connecting to a network of footpaths which extend across the wider landscape including the SSSI itself. As such, increased levels of disturbance upon those habitats supported by this SSSI, as a result of an increase in recreational pressure post development could potentially arise.

5.10 The development proposals have therefore sought to ensure appropriate compensation for those areas of semi-improved and marshy grassland habitats proposed to be lost to facilitate development, through the exclusion of development across field **F5**, with this area to be dedicated for biodiversity enhancement and sensitive management over the long-term. The vast majority of this field currently supports poor, semi-improved and marshy grassland habitats of low botanical diversity. Enhancement through additional seeding with an appropriate, species-rich grassland mix (and/or application of species-rich green hay locally acquired), to include devil's-bit scabious, the food plant of marsh fritillary butterfly), is therefore proposed to further contribute to those habitats for which the SSSI is designated. Field **F5** will also be subject to sensitive management and maintenance over the long-term so as to further increase and maximise its species diversity and habitat structure for the benefit of wildlife.

5.11 It is further recommended that field **F5** also be subject to new tree and shrub planting along its peripheries, to include a diversity of native species of local provenance, so as to further strengthen existing hedgerows and trees forming the boundaries of this ecological mitigation area.

5.12 Additionally, the development footprint itself includes the provision of areas of informal open space, totalling 0.39ha, alongside the provision of attenuation basins designed to be predominantly dry and therefore accessible for most of the year, totalling a further 0.16ha. To further minimise recreational disturbance and littering therefore, bins should be sited within publicly accessible areas to deter littering and attraction of vermin including rats and corvids which could otherwise predate wildlife.

5.13 In addition to the above, reasonable avoidance measures and best working practices to ensure the protection and maintenance of sensitive habitats on and immediately adjacent to the Application Site and across the ecological mitigation area proposed within field **F5** during the construction phase should be set out within an Ecological Construction Method Statement (ECMS) and Landscape and Ecological Management Plan (LEMP) prepared for the Application Site. This will include standard pollution prevention measures to be adopted during construction necessary to further minimise/avoid direct and indirect pollution impacts, as further discussed at **Section 6** of this report.

5.14 Overall therefore, subject to the implementation of those detailed design measures described previously at **Section 4**, and in consideration of the small scale of the development proposals (with up to 120 residential units proposed) relative to the significant coverage of Rhos Tonyrefail SSSI (over 244ha in size), no significant impacts are considered likely to arise upon the qualifying features of this SSSI.

Non-Statutory Designations

5.15 Non-statutory designations do not receive any formal legal protection. However, they do receive planning policy protection, as reflected in TAN5.

5.16 In addition, Policy AW8 of the LDP states that development proposals will only be permitted where they would not cause harm to the features of a Site of Importance for Nature Conservation (SINC) or Regionally Important Geological Site (RIGS) or other locally designated sites, unless it can be demonstrated that:

'a) The proposal is directly necessary for the positive management of the site; or b) The proposal would not unacceptably impact on the features of the site for which it has been designated; or c) The development could not reasonably be located elsewhere and the benefits of the proposed development clearly outweigh the nature conservation value of the site.'

5.17 As described in **Section 3**, no non-statutorily designated sites fall within the Application Site's boundary. However, several such designations occur within the Application Site's Zone of Influence, the closest being Cae'r-ysgol Woodland SINC situated circa 450m east of the Application Site and situated along the southern edge of part of Rhos Tonyrefail SSSI.

5.18 Subject to the implementation of those detailed design measures described previously in relation to Rhos Tonyrefail SSSI however, no significant impacts are considered likely to arise upon Cae'r-ysgol Woodland SINC.

5.19 With respect to all other non-statutory sites located within the zone of influence of the Application Site, given their distance and spatial separation from the Application Site, coupled with the relatively small scale and nature of the development proposals, the potential for significant negative impacts upon their qualifying features are considerably unlikely.

Habitats

5.20 There are several mechanisms through which habitats receive protection without the statutory and non-statutory designated site frameworks. Priority habitats comprise those listed by the Welsh Government as being of key significance to sustain and improve biodiversity in Wales, as defined under Section 7 of Part 1 of the Environment (Wales) Act 2016, with local authorities having a duty to seek to maintain and enhance biodiversity. Priority habitats receive protection as identified within policies set out in TAN5.

5.21 At the local level, Policy AW 8 of the Rhondda Cynon Taff LDP requires for features of importance to nature conservation, including ecological networks, to be preserved and enhanced. In addition, Policy AW 10 requires for development proposals to ensure no unacceptable harm arising from pollution, including light pollution and water pollution.

5.22 Habitats within the Application Site and including its site boundaries have been assessed through an Extended Phase 1 survey. In respect of the first phase of development across field **F1**, habitats supported comprise those of limited botanical interest, relating to areas of dense continuous scrub in addition to scattered scrub, tall ruderal and ephemeral/short perennial vegetation occurring across areas of hardstanding and bare ground located at its north-western extent. Such habitats are associated with the footprint of the former, now demolished, club house. However, habitats of good ecological value including a small band of semi-improved and marshy grassland occurring within the centre of field **F1**, a linear belt of secondary woodland arising from former hedgerow boundaries in its south-western corner, and scattered trees along its southern and eastern boundaries, will also be lost.

5.23 The phase 1 development footprint has, however, sought to ensure the sensitive placement of green and blue infrastructure assets adjacent to the northern and north-western boundaries of field **F1** so as to offset development away from this sensitive edge. The siting of an attenuation basin and informal public open space along here will also provide additional opportunities for sensitive landscaping, to include the planting of trees, shrubs and species-rich grassland, utilising native species of local provenance and those resilient to climate change, thereby minimising impacts upon sensitive habitats adjacent whilst providing opportunities for the maintenance, strengthening and enhancement of habitat corridors onsite and to the wider landscape.

5.24 In respect of the second phase of development, details are provided in outline only, such that the full extent of losses have yet to be defined. Nevertheless, land take will likely require the loss of the vast majority of habitats supported across fields **F2**, **F3** and **F4**, including the loss of marshy grassland habitat comprising field **F2**, poor, semi-improved

grassland comprising field **F3**, and broadleaved woodland, scrub habitat, areas of ephemeral/short perennial vegetation and built structures associated with the small holding and allotments located across field **F4**.

5.25 In addition to the overall provision of areas of informal open space (0.39ha) and sustainable drainage features (totalling circa 0.16ha) across the Application Site therefore, equating to circa 29% of its total area, and to ensure adequate compensation for habitat loss across the Application Site, development has also avoided field **F5** totalling circa 0.93ha, enabling its entirety to be dedicated for ecological mitigation. Whilst its far north-eastern corner supports species-rich marshy grassland, the vast majority of this field comprises poor semi-improved and marshy grassland of low botanical value, thereby offering good opportunities for biodiversity enhancement. As previously detailed above in relation to statutory designations, enhancements to this field through additional seeding with an appropriate, species-rich grassland mix (and/or application of species-rich green hay locally acquired), to include devil's-bit scabious, the food plant of marsh fritillary butterfly, is proposed.

5.26 Field **F5** will also be subject to sensitive management and maintenance over the long-term so as to further increase and maximise its species diversity and habitat structure for the benefit of wildlife. It is further recommended that field **F5** also be subject to new tree and shrub planting along its peripheries, to include a diversity of native species of local provenance, so as to compensate for loss across the development footprint whilst further strengthen existing hedgerows and trees forming the boundaries of this ecological mitigation area.

5.27 In respect of the hedgerow network, the proposed development footprint has also sought to enable the retention of the vast majority of boundary hedgerows/features **H1**, **H2**, **H3**, **H4**, **H6** and **H9** associated with the second phase of development. In addition, the retention of field **F5** for ecological mitigation will also secure the protection and further enhancement of the hedgerow resource onsite, with species-rich and important hedgerows **H4**, **H6** and **H7** forming the boundaries of this field. It is further recommended for habitat buffers to be incorporated adjacent to such vegetated boundaries, so as to ensure full accommodation of root protection areas whilst offsetting such features away from the proposed development edge, enabling new tree and shrub planting to be accommodated therein.

5.28 Of further consideration is the proximity of the unnamed watercourse aligning the northern boundary of the Application Site flowing westwards, upon which negative, indirect impacts associated with physical damage, contaminated surface water runoff and disturbance respectively may arise in absence of mitigation. Inherent within the proposals, however, is the implementation of a sensitive drainage strategy which will ensure appropriate conveyance and treatment of surface water run-off through the incorporation of sustainable drainage features onsite. However, the following avoidance/protection measures are also recommended for implementation during the construction phase of development:

(i) When working near water, appropriate pollution control measures will be employed with reference to Environment Agency standards[36] relating to *Pollution Prevention Guidelines* (PPGs) published by the Environment Agency, namely PPG1, *General guide to the prevention of pollution*, PPG5 *Works and maintenance in or near water*, PPG6 *Pollution prevention guidance for working at construction and demolition sites* and PPG21 *Pollution incident response planning*, to ensure that detrimental impacts to the watercourse as a result of surface run-off, spillage and pollution arising throughout the construction are avoided;

(ii) No machinery or plant should be parked within 7m of the bank and refuelling should take place within a protected bund at a designated point well away from the watercourse. Any fuel spills will be reported to the site manager and acted on immediately to ensure these do not reach the watercourse. A procedure for checking and corrective action, including regular inspections and monitoring will be put in place for the duration of proposed works; and

(iii) There should be no storage of material, machinery, plant of spoil adjacent to, and within 7m of this watercourse. This includes any waste material, earth, debris or other materials which may enter the stream.

5.29 Further specifications regarding sensitive working methodologies during the construction phase, detailed planting design, and long-term management and maintenance regimes should also be incorporated and secured by planning obligation, as follows:

- Reasonable avoidance measures and best working practices to ensure the protection and maintenance of sensitive habitats during the construction phase should be set out within an ECMS prepared for the Application Site;

- New planting and other habitat creation should be detailed within a soft landscaping scheme;

- Measures to restore and further enhance existing habitats onsite, to ensure the successful establishment of new habitats, and to maintain the value of all ecological features in the long-term, should also be detailed within a future LEMP secured by planning condition;

- To further minimise recreational disturbance and littering, bins should be sited within publicly accessible areas to deter littering and attraction of vermin including rats and corvids which could otherwise predate wildlife; and

- A sensitive lighting strategy should also be incorporated to ensure no/limited lighting provision adjacent to sensitive habitats, including hedgerow and tree boundaries and habitat buffers provided adjacent. Where lighting is required along road/pedestrian

[36] As part of the Government's 'Smarter Guidance Project', all pollution prevention guidance notes and publications previously maintained by the Environment Agency were withdrawn in December 2015 to simplify and streamline guidance provided. Pollution Prevention Guidelines (PPGs) are currently archived on the National Archives website but remain downloadable and represent the most up to date good practice guidance notes.

routes, this should be sited within the development footprint itself and away from habitat edges to minimise disturbance and light spill. Lighting should include directional, timed or low-lux lighting, in addition to the use of appropriate hoods, shields and filters where required. Such measures are considered necessary to maintain the functionality of existing habitat corridors across the Application Site and could be secured via planning obligations/conditions attached to any future outline consent.

5.30 Taken together, the above recommendations should ensure that no significant detrimental impacts upon those habitats of ecological value supported by the Application Site will arise as a result of the proposals.

Protected and/or Notable species

5.31 Certain species receive legal protection in the United Kingdom and are commonly known as 'protected species'. In reality, the level of protection for different species varies considerably, from protection solely against 'killing and injury' to full protection of the species and their places of refuge. Where pertinent, details of legal protection afforded to species/species-groups are provided below.

5.32 In addition to protected species, there are other species/species-groups that do not receive legal protection, but which are notable owing to their conservation status as priority species or other status. Details of any actual or potential notable species within the Application Site are identified below. With respect to planning policy, protected and notable species are also afforded policy protection at a national level by TAN5, which requires planning authorities to ensure that such species are protected from the adverse effects of development. In addition, Policy AW8 of the LDP states that all development proposals that may affect protected and priority species will be required to demonstrate what measures are proposed for the protection and management of the species and the mitigation and compensation of potential impacts.

5.33 Baseline investigations have identified the need to consider a number of protected and notable species occurring or potentially occurring across the Application Site, including bats, birds, badger, otter and common reptiles, each of which are discussed in turn below.

Bats

5.34 All species of British bat are listed as a European Protected Species (EPS) on Schedule 2 of the Conservation Regulations (Annex IV(a) to the Habitats Directive). This affords it protection under the Conservation of Habitats and Species Regulations 2017, making it an offence to:

- Deliberately capture, injure or kill a wild animal of an EPS;

- Deliberately disturb wild animals of an EPS wherever they are occurring, in particular, any disturbance which is likely to impair their ability to survive, to breed or reproduce, to affect significantly the local distribution or abundance of the species to which they belong, or in the case of hibernating or migratory species, to hibernate or migrate; or
- Damage or destroy a breeding site or resting place of a wild animal of an EPS.

5.35 Additional protection for bats is also afforded under the Wildlife and Countryside Act 1981 (as amended), making it an offence to intentionally or recklessly disturb bats whilst they are occupying a structure or place which is used for shelter or protection, or to obstruct access to this structure or place. In addition, 8 of the 18 species of bat resident in the UK (greater horseshoe, lesser horseshoe, barbastelle (*Barbastellus barbastellus*), Bechstein's (*Myotis bechsteinii*), soprano pipistrelle, common pipistrelle, brown long-eared and noctule) are also listed as priority species.

Roosting Bats

5.36 No bat roosts have been confirmed for the Application Site. However a total of 15 trees were assessed as having potential to support roosting bats, including 3 (bat trees **T12**, **T17** and **T26**) with have high potential, 6 (bat trees **T8**, **T13**, **T18**, **T20**, **T39** and **T51**) with moderate potential, and 6 (bat trees **T19**, **T21**, **T31, T34**, **T40** and **T46**) with low potential to support roosting bats (**Plan EDP 4b**).

5.37 In respect of the first phase of development, bat trees **T17** and **T26** with high potential, bat trees **T39** and **T51** with moderate potential, and bat trees **T31** and **T34** with low potential, will require removal. In respect of the second phase of development, the required removal of the block of broadleaved woodland across field **F4** will result in the loss of bat trees **T18** and **T20** with moderate potential and bat trees **T19** and **T21** with low potential, Bat trees **T12** with high potential, and bat trees **T8** and **T13** with moderate potential may also be impacted.

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5.38 Given the current absence of roosting bats onsite, there is no requirement for any tree felling works to be completed under an NRW Development Licence. However, it is advised that given the potential of the trees to support roosting bats, and in consideration of the transitory nature of bats, an update aerial inspection of all potential roost features should be undertaken prior to, and within 48 hours of tree works commencing, with the advice of the bat licensed ecologist followed. Aerial surveys will be undertaken by a suitably qualified and NRW licensed bat ecologist, arboricultural contractor with an NRW bat licence, or with experience of working with bats and under the supervision of an NRW bat licence holder.

5.39 Additionally, should any future tree works such as limb removal, crown reduction, or felling be required to remaining trees onsite, either as a result of poor tree health or due to public health and safety concerns, then further update inspections as described above is advised prior to commencement.

5.40 Should any bats be discovered during the aerial re-inspections then all works must cease and an NRW Development Licence for bats will likely be required prior to works recommencing, with sensitive working methodologies implemented.

5.41 Where no roosts are found but bat roosting potential remains, then as a precautionary measure it is recommended that such trees should be subject to a 'soft' felling methodology by a suitably qualified arboricultural contractor with experience of working with bats and following the advice of the suitably qualified and licensed ecologist and supervised where necessary. A soft felling methodology involves the following approach:

- The avoidance of cutting through cavities/potential roosting features – i.e. cutting above and below the feature when removing sections with suitable features;

- Any sections to be cut supporting suitable roosting features are to be suitably harnessed and supported before cutting using industry-standard rigging equipment, and gently lowered to the ground once cut, to avoid violent movement of potential roosting features; and

- The retention of cut sections with potential roosting features on site for 48 hours, with potential entrances not blocked i.e. facing away from the ground, before being removed or chipped.

5.42 Where bat roost features can be feasibly sectioned from trees to be lost and likely retained as intact over the long term, every effort should be made to reinstall such features within close proximity, by attaching to appropriate tree standards to be retained. The advice of the bat licensed ecologist will be followed.

5.43 Should any bat be discovered during works, and without a Development Licence in place, then all works will necessarily cease, and the advice of the licensed bat ecologist sought. It may be necessary to obtain a Development Licence before works can continue.

5.44 In addition, given the protection afforded to all breeding birds, their nests, eggs and young, should active bird nests or nests under construction be found, then all works will cease until all eggs have hatched and chicks fledged, with appropriate buffers marked out around active nests where appropriate (as determined by the suitably qualified ecologist).

5.45 It is further advised that additional update aerial inspections be completed of all such trees should clearance works be delayed beyond 12 months from the last inspection.

5.46 A summary of recommendations is provided within **Table EDP 5.1**.

Table EDP 5.1: Summary of recommendations for trees with bat roost potential to be impacted by development.

Tree ID	Species	Bat Tree Roosting Potential	Recommendations
Bat Trees (locations illustrated at Plan EDP 4b)			
T12	Goat willow (*Salix caprea*)	High	• Prior to commencement of tree works, an update aerial inspection should be undertaken prior to, and within 48 hours of works commencing to reinspect potential roost features; • Update inspections should be undertaken by a suitably qualified bat licensed ecologist and/or arboricultural contractor; • Implementation of soft felling methodology required during the works; • Works must cease, and the advice of a suitably qualified ecologist sought should evidence of bats be discovered; and • Update aerial inspections recommended in the event of delays to clearance works beyond 12 months of the original assessment.
T17	Pedunculate Oak (*Quercus robur*)	High	
T26	Pedunculate Oak (*Quercus robur*)	High	
T8	Pedunculate Oak (*Quercus robur*)	Moderate	
T13	Goat willow (*Salix caprea*)	Moderate	
T18	Goat willow (*Salix caprea*)	Moderate	
T20	Goat willow (*Salix caprea*)	Moderate	
T39	Goat willow (*Salix caprea*)	Moderate	
T51	Pedunculate Oak (*Quercus robur*)	Moderate	
T19	Goat willow (*Salix caprea*)	Low	
T21	Pedunculate Oak (*Quercus robur*)	Low	
T31	Pedunculate Oak (*Quercus robur*)	Low	
T40	Black alder (*Alnus glutinosa*)	Low	

5.47 Additionally, to further enhance roosting opportunities onsite it is further recommended that Schwegler bat boxes[37] (or similar) be installed upon suitable, mature trees retained along the peripheries of the Application Site. Bat access features in the form of bat access tiles/slates and/or bat tubes[38]/bat bricks[39] should also be considered for integration into new buildings. Bat roosting features should be erected away from sources of artificial lighting with a south-east/south-west facing aspect where possible, and in accordance with manufacturer's specifications.

Foraging/Commuting Bats

5.48 Bat activity surveys undertaken at the Application Site during 2019 and 2020 confirm a total of at least eight bat species/groups utilising the Application Site for foraging and

[37] http://www.nhbs.com/browse/search?title-type-facet%5B%5D=&term=bat+boxes.
[38] http://www.nhbs.com/title/162812/2fr-schwegler-bat-tube
[39] http://www.ibstock.uk.com/pdfs/ideas-into-action/ideas-into-action-bats.pdf

commuting purposes. Bat activity was dominated by common and widespread bat species and with the majority of registrations relating to pipistrelle bats.

5.49 The development footprint will result in a reduction of foraging habitat available to the local bat assemblage, whilst potential disturbance impacts could also arise in respect of artificial lighting. Subject to implementation of those measures detailed previously above with respect to designated sites and habitats however, no significant impacts upon the local bat assemblage are considered likely to arise, particularly in consideration of the relatively limited scale and extent of the development proposals, coupled with the availability of suitable habitat immediately adjacent to the Application Site and within the wider landscape.

5.50 Avoidance, mitigation and enhancement measures proposed for implementation include: the retention, protection and buffering of the vast majority of the hedgerow network; the provision of areas of informal open space and sustainable drainage features subject to sensitive tree, shrub and grassland planting; the provision of additional tree, shrub and grassland planting across field **F5** to be dedicated for ecological mitigation; and the implementation of a sensitive lighting strategy.

Breeding Birds

Legislation

5.51 All wild birds, their nests and eggs are protected under Section 1 of the Wildlife and Countryside Act 1981 (as amended). This makes it an offence to:

- Intentionally kill, injure or take any wild bird;
- Take, damage or destroy the nest of any wild bird while it is in use or being built;
- Take, damage or destroy the egg of any wild bird; or
- To have in one's possession or control any wild bird (dead or alive) or egg, or any part of a wild bird or egg.

5.52 In addition, further protection is afforded to those wild bird species listed on Schedule 1, prohibiting any intentional or reckless disturbance to these species while it is nest building, or at a nest containing eggs or young, or to recklessly disturb the dependent young of such a bird. A number of species are also included as priority species.

5.53 Those habitat retention, mitigation and enhancement measures to be incorporated into the proposed site layout, as previously detailed above in respect of designated sites and habitats, are also considered to ensure that impacts upon the local breeding bird assemblage are minimised as far as possible, given their likely continued association with those habitats retained within and adjacent to the Application Site.

5.54 However, given the protection afforded to all breeding birds, their nests, eggs and young, sensitive vegetation clearance required during the pre-construction and construction phases of development should be timed to avoid the main bird breeding season (i.e. March to August inclusive).

5.55 Specifically, woody material should be cut down using hand-held tools/machinery to heights of no less than 30cm above ground between the months of September and February so as to avoid the main bird breeding season, and in a direction towards retained vegetation.

5.56 Thereafter, below-ground clearance of tree stumps and root balls will be undertaken between April and October so as to ensure the avoidance of harm to other wildlife potentially hibernating during the winter months. All below-ground material including tree stumps, root balls, buried rubble, spoil etc., will be lifted out using a tracked excavator and undertaken in a sensitive manner to ensure no significant disturbance to soil and adjacent, retained planting. Vehicles will avoid tracking across areas subject to clearance, and will instead be confined to the hedgerow edges and field interiors utilising long-reach machinery where required.

5.57 Should the above seasonal constraints/timings prove impracticable, the undertaking of such clearance outside of the above proposed timeframes may be able to be completed following the advice and under the supervision of a suitably qualified ecologist. Pre-commencement checks for active bird nests will be required prior to any vegetation clearance occurring during the main bird breeding season however, with appropriate buffers marked out around active nests or nests under construction, until all eggs have hatched, and chicks fledged.

5.58 In addition, it is further recommended that bird boxes[40] be installed/integrated within new buildings and/or upon suitable retained trees across the Application Site where appropriate. Bird box installation will be undertaken in accordance with manufacturer's specifications, and will be sited carefully in relation to aspect so as to be protected from strong wind, rain and sunlight (not south facing), and at suitable heights above ground (circa 3-6m above ground).

Badger

Legislation

5.59 Badger and their setts receive protection under the Protection of Badgers Act 1992, which protects badgers from deliberate harm and injury. The protection afforded to badgers is primarily due to animal welfare issues and not due to concerns over their unfavourable nature conservation status. Restrictions under this act which apply to development include any killing, injuring, possession or cruel treatment to badgers, any interference to a sett through damage or destruction, any obstruction of access to any entrance of a sett, or any disturbance to a badger whilst it is occupying a sett.

[40] See http://www.nhbs.com/browse/subject/908/bird-boxes

5.60 No impacts to active badger setts are predicted given their presumed absence from the Application Site. Whilst the development will result in the loss of grassland habitat providing potential foraging opportunities, should they be present in the vicinity. Such impacts are not considered to be significant given the limited extent of such losses and the proposed retention and creation of good quality habitats onsite.

5.61 Nevertheless, given their potential presence within the wider landscape, precautionary methods of working should be detailed within any future ECMS for the Application Site, to ensure the avoidance of impacts during the construction phase.

5.62 Additionally, given their mobility and widespread nature, an update walkover survey of the Application Site by a suitably qualified ecologist, immediately prior to the commencement of construction or site clearance works, is also recommended to inform the need for any additional measures requiring implementation.

Otter

Legislation

5.63 Otter is listed as a European Protected Species (EPS) on Schedule 2 of the Conservation Regulations (Annex IV(a) to the Habitats Directive), affording it protection under the Conservation of Habitats and Species Regulations 2017. Additional protection for otter is also afforded under the Wildlife and Countryside Act 1981 (as amended), making it an offence to intentionally or recklessly disturb otter whilst they are occupying a structure or place which is used for shelter or protection, or to obstruct access to this structure or place. Otter is also listed as a species of Principal Importance for the purposes of conserving biodiversity, covered under Section 7 (of the Environment Act (2016).

5.64 The unnamed watercourse situated along the northern boundary of the Application Site is to be fully retained and sufficiently offset from the proposed development footprint. Moreover, no evidence of otter resting places including holts and couches have been identified during surveys undertaken of this watercourse to date, such that a Development Licence from NRW is not required in respect of any drainage works anticipated to facilitate development.

5.65 However, otter have been confirmed to utilise the watercourse as a commuting corridor. As such, prior to the commencement of works, it is recommended that the watercourse be subject to an update assessment for evidence of otter by a suitably qualified ecologist. Where evidence of a resting place or lying up site is identified, the ecologist will determine whether any further species-specific working methodologies will be required, including the establishment of suitable buffers and/or the likely requirement for the disturbance/destruction of such features under an Development Licence from NRW.

5.66 The implementation of reasonable avoidance measures, as previously detailed above, is also advised, including the avoidance of construction works and storage of materials, machinery, plant or spoil within 7m of the banks of the watercourse during the

pre-construction and construction phases of the development, alongside the implementation of a sensitive drainage strategy and sensitive lighting strategy.

Common Reptiles

Legislation

5.67 All species of common reptile (including common lizard (*Zootoca vivipara*), slow-worm (*Anguis fragilis*), grass snake (*Natrix natrix*) and adder (*Vipera berus*)), receive at least limited protection from harm under the Wildlife and Countryside Act 1981 (as amended), making it an offence to cause intentional killing and injuring of these species. In addition, these species are also listed as priority species.

5.68 A low population of common lizard and a medium/good population of slow-worm is supported by the Application Site, with a maximum of four common lizard individuals and 19 slow-worm individuals recorded during any one visit, predominantly in association with field **F1** supporting scrub and grassland habitats.

5.69 A reptile mitigation strategy will therefore be required for the Application Site, detailed within a future ECMS prepared for the Application Site, and will follow the below principles:

- Prior to commencement of vegetation clearance and construction, a site visit will be undertaken by a suitably qualified ecologist to determine the current status of all habitats onsite and their continued suitability to support common reptile species, so as to inform the reptile translocation exercise and those methodologies to be employed going forward to ensure the avoidance of harm to reptiles during any future habitat clearance of the construction footprint;

- Field **F5** will comprise the receptor site for any common reptiles requiring translocation, and will be subject to prior habitat enhancement measures including: the sensitive management of grassland habitats supported therein to maximise habitat structure; and the creation of reptile hibernacula and log/brash piles therein so as to maximise its existing carrying capacity to accommodate common reptiles. Such measures will be completed prior to commencement of habitat clearance across the construction footprint;

- Above-ground removal of scrub habitats and other woody vegetation will be completed using hand-held machinery under the supervision of a suitably qualified ecologist (Ecological Clerk of Works (ECoW)), and will follow those sensitive clearance methodologies and timings previously described in relation to breeding birds;

- Thereafter, below-ground removal of root balls, stumps and other suitable refugia remaining will be completed during the main reptile active season between late April and early October so as to avoid the main reptile hibernation season. Such habitats will be subject to a prior finger-tip search by the ECoW. Any reptiles identified during

such works will be translocated by hand to the receptor site (field **F5**) for release on the same day;

- Thereafter, reptile exclusion fencing will be installed around the peripheries of the construction footprint between mid-April and early October (i.e. during the main reptile active season) following the advice of the ECoW, and will be remain in place and subject to maintenance throughout the construction phase. Reptile refugia will be deployed therein so as to facilitate commencement of a capture and translocation exercise prior to habitat clearance works; and

- The reptile translocation exercise, incorporating habitat manipulation measures where necessary to facilitate to displacement of individuals towards reptile refugia, will be undertaken by the ECoW during the main reptile active season, with all individuals captured by hand and immediately released within the receptor site.

5.70 Following completion of the translocation exercise and/or displacement methodologies, clearance of grassland habitats across the construction footprint will be undertaken in accordance with those methodologies detailed below:

- To prevent harm/injury to common reptile species potentially present onsite, all vegetation clearance will be undertaken during the main reptile active season and under supervision of a suitably qualified ecologist, hereafter referred to as the ECoW;

- Any potential reptile refugia remaining within the construction footprint will be carefully dismantled using hand tools, hand-held machinery or untracked, light machinery to facilitate efficient supervision;

- All remaining grassland habitat located within the proposed development footprint will be subject to directional cutting over two phases. Specifically, an initial cut of grassland habitat will be undertaken using hand-held machinery, reducing vegetation height down to a minimum of 175mm, with clearance commencing from the centre of the fields and directed towards adjacent habitat to be retained along its peripheries. A second cut of the proposed footprint areas will be undertaken immediately thereafter, with vegetation cut to ground level as far as possible, ensuring heights not exceeding 30mm;

- All arisings will be removed from the construction footprint and vegetation will be maintained thereafter at a height no greater than 30mm through regular mowing or strimming or as bare ground, so as to discourage common reptiles from returning; and

- In the event any reptiles are identified during site clearance these will be captured by hand and immediately released into the receptor site.

5.71 In addition to the above, it is further recommended that all areas of open space, including habitat buffers and attenuation features subject to new tree, shrub and grassland planting, in addition to those habitats proposed for retention, enhancement and creation

within field **F5**, be subject to a sensitive management regime over the long-term, designed to ensure the establishment of tall sward heights of varying structure whilst maximising species diversity, to enhance the Application Site for reptiles and other wildlife including amphibians, birds and invertebrates.

Schedule 9 Species

5.72 Japanese knotweed is present onsite and is an invasive species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended). It is an offence for any person to plant or otherwise cause to grow a plant listed on Part II of Schedule 9 of the Act. This could include cutting the plant or roots and disturbing surrounding soil if not correctly managed.

5.73 It is recommended that the control and eradication of such species from the Application Site be undertaken in accordance with the advice of a suitably qualified and specialist contractor, prior to the commencement of construction, or site clearance works. A control and eradication plan should be prepared and should describe in full those eradication measures to be implemented in respect of the phasing of construction works.

Summary of Predicted Impacts and Principal Mitigation Measures

5.74 The potential impacts on valued ecological features (accounting for inherent mitigation), and recommended additional mitigation measures, in line with legislative and planning policy requirements, are summarised in **Table EDP 5.2**.

Table EDP 5.2: Summary of Ecological Impacts and Proposed Mitigation Measures.

Feature	Impacts in Absence of Inherent Mitigation	Inherent Mitigation	Additional Mitigation and/or Enhancement
Statutory and Non-Statutory Sites			
Rhos Tonyrefail SSSI	Disturbance impacts upon habitats supported as a result of increased recreational pressure following occupation.	Habitat retention, buffering and new planting across areas of open space, sustainable drainage features and across field **F5** dedicated for ecological mitigation.	Protection of sensitive habitats during construction through implementation of an ECMS. New planting of species-rich grassland and further enhancement of retained habitats through additional seeding, in accordance with a detailed soft landscape scheme and LEMP.

Feature	Impacts in Absence of Inherent Mitigation	Inherent Mitigation	Additional Mitigation and/or Enhancement
Habitats			
Broadleaved Woodland, trees & Scrub	Loss, damage and degradation during the construction phase and following occupation.	New tree and shrub planting proposed across areas of informal open space, within proposed habitat buffers and within field **F5** dedicated for ecological mitigation.	Protection of sensitive habitats during construction through ECMS. Enhancement through provision of new planting within areas of open space and field **F5**, in accordance with a detailed soft landscape scheme and LEMP. Development of a sensitive lighting strategy to reduce light spill to sensitive habitats.
Hedgerows	Loss, damage and degradation during the construction phase and following occupation.	Avoidance, retention, buffering and infill planting of existing gaps within hedgerows to be retained. Planting of trees and shrubs across the Application Site within areas of open space and field **F5** dedicated for ecological mitigation.	Protection of hedgerows and mature trees to be retained onsite during construction through implementation of an ECMS. Enhancement of retained habitats through additional planting in accordance with a detailed soft landscape scheme and LEMP. Development of a sensitive lighting strategy to reduce light spill to sensitive habitats.

Feature	Impacts in Absence of Inherent Mitigation	Inherent Mitigation	Additional Mitigation and/or Enhancement
Watercourse	Surface/ground water run-off and pollution during construction and operation; degradation post-development.	Habitat retention and buffering. Provision of a 7m buffer to offset construction footprint from any watercourse. Implementation of a sustainable drainage strategy to include the provision of sustainable drainage features.	Protection of sensitive habitats during construction through implementation of an ECMS. Adherence to sensitive working methodologies and pollution prevention guidelines. Implementation of a sustainable drainage strategy.
Semi-improved and Marshy Grassland Fields	Loss, damage and degradation during the construction phase; further damage and degradation of habitats following occupation.	Habitat retention, buffering and new planting across areas of open space, sustainable drainage features and across field **F5** dedicated for ecological mitigation.	Protection of sensitive habitats during construction through implementation of an ECMS. New planting of species-rich grassland and further enhancement of retained habitats through additional seeding, in accordance with a detailed soft landscape scheme and LEMP.

Feature	Impacts in Absence of Inherent Mitigation	Inherent Mitigation	Additional Mitigation and/or Enhancement
Species			
Bats & Breeding Birds	Loss, damage and degradation of habitats during the construction phase; further damage and degradation of habitats following occupation. Elevated lighting and noise during construction phase and following occupation. Killing, injury and disturbance during construction phase and following occupation.	Habitat retention and buffering. New tree and shrub planting proposed across areas of informal open space, within habitat buffers and adjacent to hedgerows to be retained. New grassland planting across areas of open space. New tree and shrub planting in addition to enhancement of grassland habitats also proposed within field **F5** dedicated for ecological mitigation.	Protection of sensitive habitats and adoption of sensitive working methodologies and pre-commencement checks for bats and birds during construction through implementation of an ECMS. Development of a sensitive lighting strategy to reduce light spill to sensitive habitats. Enhancement of retained habitats through additional planting in accordance with a detailed soft landscape scheme and LEMP.
Badger & Common Reptiles	Killing, injury and disturbance during construction phase and following occupation. Permanent loss of habitat during construction phase and following occupation.	New tree and shrub planting proposed across areas of informal open space, within habitat buffers and adjacent to hedgerows to be retained. New grassland planting across areas of open space. New planting proposed within field **F5** dedicated for ecological mitigation.	Precautionary working methods to be employed throughout construction through implementation of an ECMS. Adoption of sensitive working methodologies to ensure no harm to badger and common reptiles. Enhancement of retained habitats through additional planting in accordance with a detailed soft landscape scheme and LEMP.

Feature	Impacts in Absence of Inherent Mitigation	Inherent Mitigation	Additional Mitigation and/or Enhancement
Otter	Damage and degradation of habitats during the construction phase. Elevated lighting and noise during construction phase and following occupation. Killing, injury and disturbance during construction phase and following occupation.	Habitat retention and buffering. Provision of a 7m buffer to offset construction footprint from the watercourse. Implementation of a sustainable drainage strategy to include the provision of sustainable drainage features.	Protection of sensitive habitats and adoption of sensitive working methodologies and pre-commencement checks for otter during construction through implementation of an ECMS. Development of a sensitive lighting strategy to reduce light spill to sensitive habitats. Implementation of a sustainable drainage strategy.
Invasive Species	Spread of invasive species during construction and operation.	Removal and eradication of invasive species.	Removal and eradication of invasive species in accordance the advice of a specialist contractor. Monitoring and management of newly created habitats for invasive species during the operation phase.

Section 6
Summary and Conclusions

6.1 This section of the Ecological Appraisal summarises the Ecology Strategy for the proposed development, in terms of inherent and recommended additional mitigation measures, and then provides the overall conclusions of the Appraisal.

Summary of Ecology Strategy

Inherent Avoidance, Mitigation and Enhancement Measures Proposed and Further Recommended Detailed Design Measures

6.2 Proposed inherent avoidance, mitigation and enhancement measures incorporated within the development proposals include the following:

- The provision of areas of informal open space (circa 0.39ha), alongside the provision of attenuation basins designed to be predominantly dry and therefore accessible for most of the year (circa 0.16ha), comprising circa 29% of the total Application Site area;

- In respect of the detailed design for phase 1 development, the offsetting of the development footprint from its northern and north-western boundaries as far as possible through locating green and blue infrastructure along here, providing opportunities for new tree, shrub and species-rich grassland planting;

- The full retention of habitats comprising field **F5** to be dedicated as an ecological mitigation area, totalling circa 0.93ha, with this area to be subject to biodiversity enhancement including additional seeding with an appropriate, species-rich grassland mix (and/or application of species-rich green hay locally acquired), to include devil's-bit scabious, the food plant of marsh fritillary butterfly), so as to maximise its species diversity and habitat structure for the benefit of wildlife;

- The full retention of hedgerows **H4**, **H6** and **H7** associated with field **F5**, in addition to the retention of the vast majority of boundary hedgerows/features **H1**, **H2**, **H3**, **H4**, **H6** and **H9** associated with the second phase of development;

- The provision of new tree and shrub planting within areas of informal open space and habitat buffers proposed across the Application Site, in addition to along the peripheries of field **F5** retained as an ecological mitigation area, to include a diversity of native species of local provenance, so as to further strengthen and protect existing hedgerows and trees forming the boundaries of this ecological mitigation area; and

- The sensitive management and maintenance of all retained, enhanced and newly created habitats onsite by a Private Management Company over the lifetime of the development.

6.3 Additional detailed design measures recommended include:

- All new planting to include appropriate native tree, shrub and scrub species of local provenance and/or those resilient to climate change, including species considered to be favourable to bats, reptiles and other wildlife, chosen to maximise structural and species diversity, fruiting/flowering potential and seasonal availability;

- The incorporation of habitat buffers adjacent to vegetated hedgerow and tree boundaries to be retained, ensuring the full accommodation of root protection areas whilst offsetting such features away from the proposed development edge, enabling new tree and shrub planting to be accommodated therein;

- The implementation of a sensitive lighting strategy to ensure no/limited lighting provision adjacent to sensitive habitats, including hedgerow and tree boundaries and habitat buffers provided adjacent. Lighting design should ensure the provision of 'dark corridors' across field **F5**, including along its peripheries. Where lighting is required along road/pedestrian routes, this should be sited within the development footprint itself and away from habitat edges to minimise disturbance and light spill. Lighting should include directional, timed or low-lux lighting, in addition to the use of appropriate hoods, shields and filters where required;

- Provision of roosting features for birds and bats across the Application Site for installation upon suitable mature trees to be retained and/or integration into new buildings, with such features erected away from sources of artificial lighting, thereby further enhancing roosting opportunities for the local bird and bat assemblage;

- Creation of reptile hibernacula and log/brash piles across field **F5** so as to maximise its carrying capacity to accommodate those common reptile individuals proposed to be translocated away from the development footprint;

- The implementation of a control and eradication plan in respect of invasive species, detailing measures to be implemented in respect of the control and eradication of Japanese knotweed from the Application Site by a specialist contractor; and

- The installation of bins within publicly accessible areas of open space to minimise recreational disturbance and littering whilst avoiding the attraction of vermin including rats and corvids which could otherwise predate wildlife.

Construction Measures

6.4 An ECMS should be prepared for the Application Site, to be secured by condition attached to any forthcoming planning consent, to detail the following precautionary measures:

- Measures to physically protect retained habitats on and immediately adjacent to the Application Site. This will include specifications for protective fencing and signage, together with the identification of responsibilities for maintaining this fencing/signage during the demolition and construction period. Valued habitats retained within and adjacent to the development footprint including the watercourse, hedgerows and trees should be protected through the inclusion of habitat buffers comprising Ecological Protection Zones (EPZs) ensuring root protection areas are fully accommodated;

- The location of any work compound(s) and storage areas, including the storage of any fuel, chemicals, plant or machinery, and the use of temporary artificial lighting (including security lighting);

- The employment of appropriate pollution control measures necessary to minimise the risk of potential pollution events such as spills, leaks and other incidents during the construction phase, particularly in relation to the watercourse along the northern boundary. Appropriate pollution control measures will be employed with reference to Environment Agency standards[41] relating to *Pollution Prevention Guidelines* (PPGs) published by the Environment Agency, namely PPG1, *General guide to the prevention of pollution*, PPG5 *Works and maintenance in or near water*, PPG6 *Pollution prevention guidance for working at construction and demolition sites* and PPG21 *Pollution incident response planning*, to ensure that detrimental impacts to the watercourse as a result of surface run-off, spillage and pollution arising throughout the construction are avoided;

- Precautionary working methodologies and sensitive timings to be employed in relation to bats, breeding birds, badger, otter and common reptiles, to ensure the avoidance of harm to wildlife, for implementation/consideration throughout the pre-construction and construction phases;

- Measures regarding newly planted areas and sustainable drainage features, with respect to their locations, establishment and care during the construction phase; and

- A timetable of all key tasks to be undertaken as part of pre-construction and construction works taking into account all species and habitat sensitivities.

Restoration, Enhancement and Maintenance Measures

6.5 A future Landscape and Ecological Management Plan (LEMP), should also be prepared for the Application Site including the dedicated ecological mitigation area (field **F5**), to be secured by condition attached to any forthcoming planning consent, to include:

[41] As part of the Government's 'Smarter Guidance Project', all pollution prevention guidance notes and publications previously maintained by the Environment Agency were withdrawn in December 2015 to simplify and streamline guidance provided. Pollution Prevention Guidelines (PPGs) are currently archived on the National Archives website but remain downloadable and represent the most up to date good practice guidance notes.

- Those ecological management prescriptions for defined management compartments to be retained and/or created;

- The monitoring of biophysical changes to sensitive habitats including; terrestrial succession and scrub encroachment within all retained, enhanced and newly created habitats; and the management of recreational impacts including littering, erosion and damage, with identified remedial measures to address any significant issues;

- The monitoring of roosting features provided across the Application Site for birds and bats; and

- Any additional monitoring requirements of species and habitats where required/identified.

6.6 It is anticipated for the prescribed management and maintenance regime of those habitats retained onsite will be delivered over the lifetime of the development by a Private Management Company.

Overall Conclusions

6.7 EDP's desk-based and field-based baseline investigations have demonstrated that the habitats and species present within and around the Application Site do not pose an 'in principle' constraint to the proposed development that is the subject of this Appraisal.

6.8 However, EDP's surveys have identified notable habitat features supported by the Application Site with the potential to support protected species, which will require further consideration. The mature hedgerow network, broadleaved woodland and trees, dense scrub and marshy grassland habitats onsite, in addition to the unnamed watercourse aligning the Application Site's northern boundary, are considered to provide suitable habitat for bats, breeding birds, badger, otter, common reptiles and other wildlife.

6.9 Whilst land take associated with the proposals will result in the loss of approximately 3.68ha of the circa 5.16ha Application Site to proposed development, equating to c. 71% of the total Application Site area, such impacts are to be mitigated for through the sensitive design and layout of the proposed development footprint. This includes the provision of green and blue infrastructure to incorporate new tree, shrub and grassland planting along the northern and north-eastern peripheries of field **F1** in respect of the first phase of development, so as to ensure the provision and strengthening of habitat corridors across the Application Site to the wider landscape. In addition, the entirety of field **F5** and those habitats supported therein is to be retained as an ecological mitigation area, to be subject to biodiversity enhancement through additional tree, shrub and grassland planting, in addition to the creation of reptile hibernacula and refugia alongside their sensitive management over the long-term. The full retention of hedgerows **H4**, **H6** and **H7** associated with field **F5**, in addition to the retention of the vast majority of

boundary hedgerows/features **H1**, **H2**, **H3**, **H4**, **H6** and **H9** associated with the second phase of development, is also proposed.

6.10 Accordingly, from the outset of the design process, EDP has contributed to the design of the Site Layout assessed by this report, which accompanies the planning application. Specific proposals for the avoidance, mitigation and compensation of any predicted impacts have been provided. These measures include those already embedded within the development proposals; measures recommended for incorporation at the construction stage; those which should be designed and specified within the landscaping scheme; and management measures to ensure that the design vision is achieved in the long term. Measures to be implemented at the construction stage and over the long-term post development, can be secured via appropriately worded conditions attached to any forthcoming planning consent.

6.11 Overall therefore, in consideration of the scale and extent of the development proposals, alongside the proportional scope of avoidance, mitigation and compensation measures proposed, EDP considers that the scheme is capable of delivering opportunities for biodiversity enhancement over the long term.

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Appendix EDP 1
Phase 1 Site Layout & Illustrative Masterplan, Hammond Architectural Ltd. (1892 - TP-01, Rev. A, January 2020; & 1892 - MP-01, Rev. A, October 2020)

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Electricity Distribution Site

Site Key

- Application Boundary
- Phase 1 & 2 Divide
- 1.8m high close board fence
- 0.6m high timber knee rail
- 1.8m high personnel gate
- Parking space
- Affordable unit - Social Rented
- Primary door to dwelling (part M)
- Secondary door(s) to dwelling
- Garage Entrance Door
- Exiting Retained Trees
- Proposed Trees, refer to Landscape Architects for tree planting scheme

House Type Schedule - Phase 1 (Plots 1 to 42)

	House Code	Net Floor Area (ft²)	Number of Bedrooms	House Type Name	Number of Units	Total Net Area of Each Unit (ft²)
Affordable Units	2.1.1	549	1	1 Bed Flat	8	4392
	1-2BF	667	1	1 Bed GF Flat Adapted	7	4669
	1-2BF	743	2	2 Bed FF Flat	7	5201
	3.2.3	642	2	2 Bed Bungalow	4	2568
	AD-B	1243	3	3 Bed Adapted Bungalow	4	4972
	4.2.1	911	2	2 Bed 4 Parson House	8	7288
	7.4.1	1254	4	4 Bed 7 Person House	4	5016
Total No. of Units & Total Net Area (ft²)					42	34106

Detention Basin

Grasscrete Surface

Phase 1
Phase 2

Ecological Mitigation Area

A: Ecological Mitigation area added to layout, exiting and proposed trees updated — 18.11.20

REV.	DESCRIPTION	DATE

CLIENT
Lewis Homes Ltd

JOB TITLE
Mill Street, Tonyrefail.

DRAWING TITLE
Phase 1 - Site Layout

SCALE @ A1	DATE	DRAWN BY
1:500	January '20	RW
JOB NO.	DRAWING NO.	REVISION
1892	TP-01	A

SCALE BAR
0 5 10 20 30 40 50

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Electricity Distribution Site

Site Entrance

Detention Basin

Private Drive

Phase 1

Phase 2

Public Open Space

Public Open Space

Public Open Space

Private Drive

Private Drive

Private Drive

Phase 1

Phase 2

Existing Lane Retained

Ecological Mitigation Area

54 58 60 39 45 59 80 71 83 97

N

W E

S

SCALE BAR

0 5 10 20 30 40 50

REV.	DESCRIPTION	DATE

CLIENT
Lewis Homes Ltd

JOB TITLE
Mill Street, Tonyrefail.

DRAWING TITLE
Illustrative Master Plan

SCALE @ A1	DATE	DRAWN BY
1:500	Ovtober '20	RW
JOB NO.	DRAWING NO.	REVISION
1892	MP-01	A

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Appendix EDP 2
Site Location Plans
(1892 - SLP-01 & SLP-02, Hammond Architectural Ltd, November 2020)

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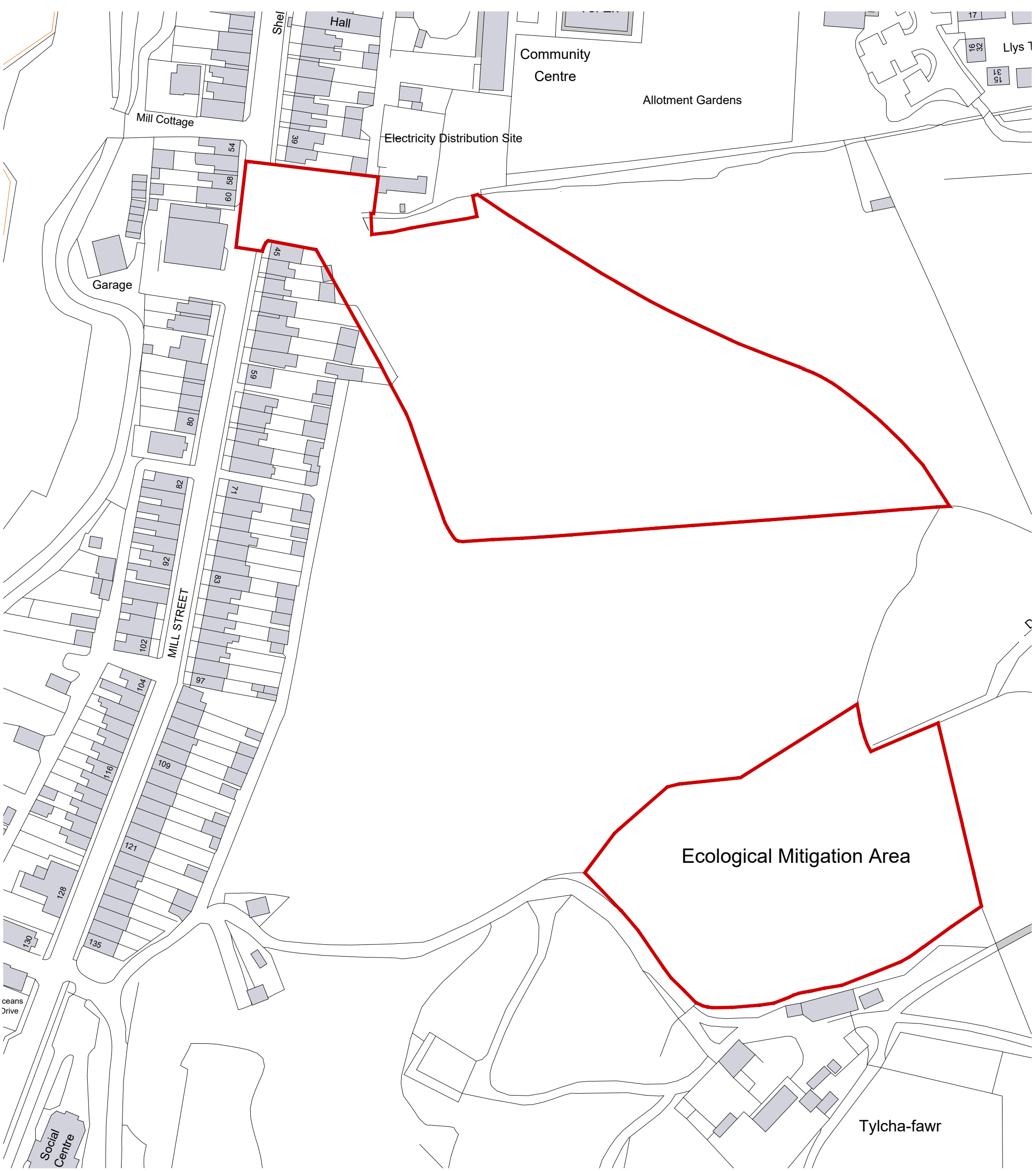

Key:

Site Application Boundary

N

W E

S

SCALE BAR

0 10m 20m 30m 40m 50m 75m 100m

REV.	DESCRIPTION	DATE

CLIENT
Lewis Homes Ltd

JOB TITLE
Mill Street, Tonyrefail.

DRAWING TITLE
Phase 1
Site Location Plan

SCALE @ A3	DATE	DRAWN BY
1:1250	November '20	RW
JOB NO.	DRAWING NO.	REVISION
1892	SLP-01	-

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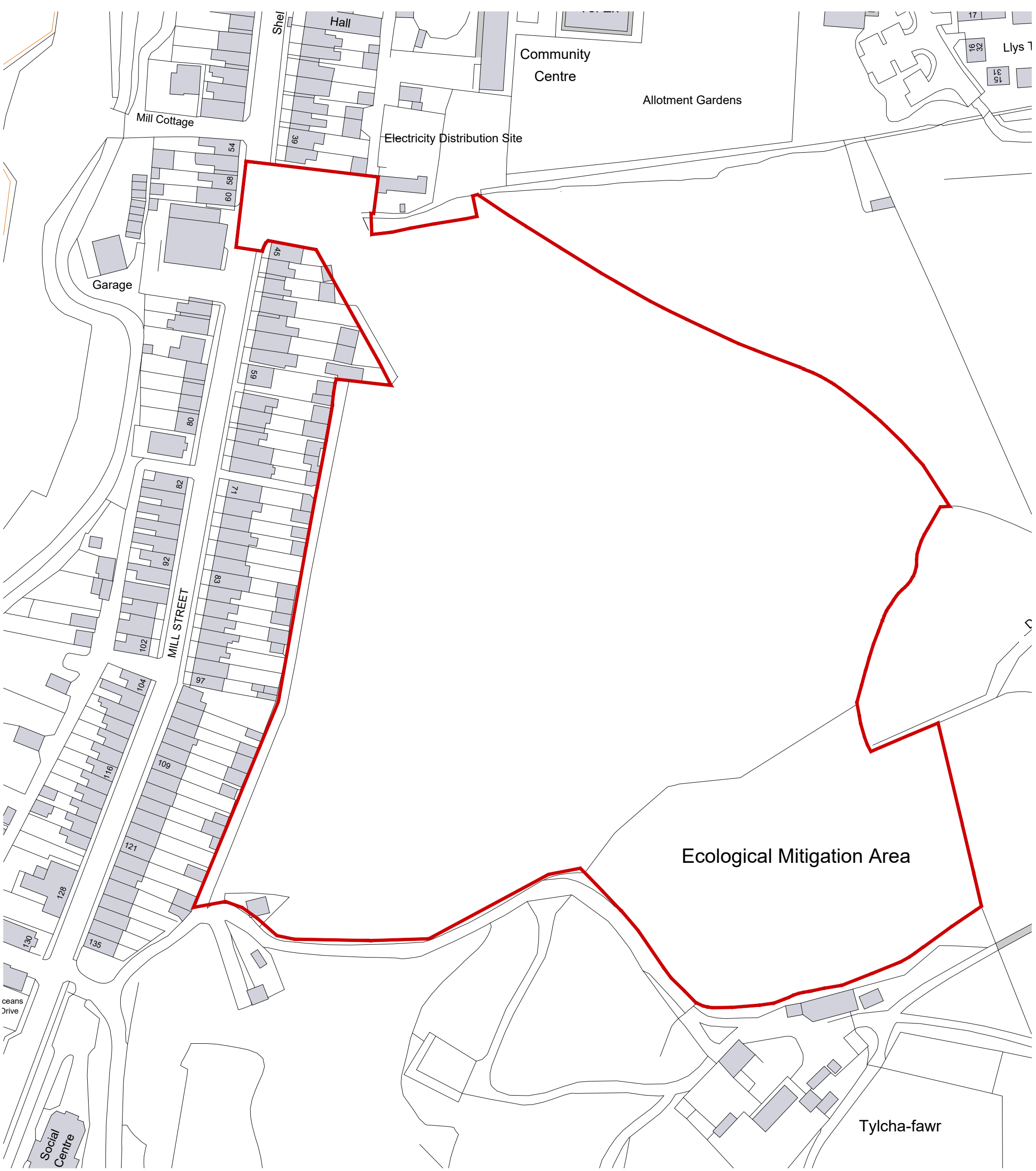

Key:

Site Application Boundary

N
W
E
S

SCALE BAR

0 10m 20m 30m 40m 50m 75m 100m

REV.	DESCRIPTION	DATE

CLIENT
Lewis Homes Ltd

JOB TITLE
Mill Street, Tonyrefail.

DRAWING TITLE
Outline Application
Site Location Plan

SCALE @ A3	DATE	DRAWN BY
1:1250	November '20	RW
JOB NO.	DRAWING NO.	REVISION
1892	SLP-02	-

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Appendix EDP 3
Illustrative Site Photographs (November 2019)

Photo EDP 1: Field **F1** with species-rich marshy grassland. Facing east.

Photo EDP 2: Field **F2** with species-rich marshy grassland. Facing south.

Photo EDP 3: Field **F3** with semi-improved marshy grassland. Facing south-west.

Photo EDP 4: Field **F4** a poor semi-improved grassland field with scattered rushes.
Facing south-west.

Photo EDP 5: The southern part of field **F5** with poor semi-improved grassland field with scattered rushes. Facing south.

Photo EDP 6: The northern part of field **F5** with marshy grassland. Facing north.

Photo EDP 7: Field **F6** with large areas of scrub. Facing north.

Photo EDP 8: The hardstanding and bare ground in the north-west section of field **F6**. Facing north.

Photo EDP 9: The area of broadleaved woodland in the south-west corner of field **F6**. Facing east.

Photo EDP 10: The section of field **F6** with semi-improved grassland and tall herb species. Facing east.

Photo EDP 11: Japanese knotweed on the northern boundary of field **F1**. Facing north.

Photo EDP 12: The stream that delineates the northern boundary of field **F1**. Facing north-west.

Photo EDP 13: The wet ditch that runs along the north boundary of field **F2** and the south-west of **F1**. Facing north-west.

Photo EDP 14: The raise wall of trees between fields **F3** and **F4**. Facing south-east.

Photo EDP 15: The section of broadleaved woodland to the west of **F4**. Facing south.

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Appendix EDP 4
Botanical (DAFOR) Assessment

Table A4.1: Secondary Woodland and Scrub Habitats

Common name	Latin Binomial	DAFOR
Sycamore	*Acer pseudoplatanus*	O
Alder	*Alnus glutinosa*	R
Silver birch	*Betula pendula*	R
Downy birch	*Betula pubescens*	F
Dogwood	*Cornus sanguinea*	R
Hazel	*Corylus avellana*	O/LA
Hawthorn	*Crataegus monogyna*	F
Ash	*Fraxinus excelsior*	F
Holly	*Ilex aquifolium*	O
Oriental privet	*Ligustrum ovalifolium*	R
Blackthorn	*Prunus spinosa*	O
Sessile oak	*Quercus patrea*	F
Dog rose	*Rosa canina agg.*	R
Bramble	*Rubus fruticosus agg.*	A/LD
Eared willow	*Salix aurita*	R
Goat willow	*Salix caprea*	A
Grey willow	*Salix cinerea*	A
Crack willow	*Salix fragilis*	R
Osier	*Salix viminalis*	R
Hybrid willow	*Salix x reichardtii*	A
Wych elm	*Ulmus glabra*	R
Guelder rose	*Viburnum opulus*	R
Cuckoo-pint	*Arum maculatum*	R
Hart's-tongue	*Asplenium scolopendrium*	O/LF
Lady fern	*Athyrium filix-femina*	R
Hedge bindweed	*Calystegia sepium*	O
Pendulous sedge	*Carex pendula*	O
Remote sedge	*Carex remota*	R
Rosebay	*Chamerion angustifolium*	R
Opposite-leaved golden-saxifrage	*Chrysosplenium oppositifolium*	R/LO
Enchanter's nightshade	*Circaea lutetiana*	O/LF
Montbretia	*Crocosmia x crocosmiifloa*	R
Cocksfoot	*Dactylis glomerata*	R
Male fern	*Dryopteris filix-mas*	O
Broad buckler fern	*Dryopteris dilatata*	R
Great willowherb	*Epilobium hirsutum*	R
Short-fruited willowherb	*Epilobium obscurum*	R
Japanese knotweed	*Fallopia japonica*	O
Goosegrass	*Galium aparine*	O
Herb robert	*Geranium robertianum*	O
Herb benet	*Geum urbanum*	R
Ivy	*Hedera helix*	A/LD
Hogweed	*Heracleum sphondylium*	O
Yorkshire fog	*Holcus lanatus*	O

Common name	Latin Binomial	DAFOR
Bluebell	*Hyacinthoides non-scripta*	R
Soft rush	*Juncus effusus*	R
Honeysuckle	*Lonicera periclymenum*	R
Yellow pimpernel	*Lysimachia nemorum*	R
Intermediate polypody	*Polypodium interjectum*	R
Hard shield fern	*Polystichum aculeatum*	R
Silverweed	*Potentilla anserina*	R
Creeping cinquefoil	*Potentilla reptans*	R
Creeping buttercup	*Ranunculus repens*	O
Broad-leaved dock	*Rumex obtusifolius*	O
Wood dock	*Rumex sanguinea*	O
Red campion	*Silene dioica*	R
Bittersweet	*Solanum dulcamara*	R
Hedge woundwort	*Stachys sylvatica*	R
Dandelion	*Taraxacum officinale agg.*	O
Nettle	*Urtica dioica*	O
Common valerian	*Valeriana officinalis*	R

Table A4.2: Grassland Habitats.

Common name	Latin Binomial	DAFOR			
		F1	F2	F3	F5
Velvet bent	*Agrostis canina*	R			
Common bent	*Agrostis capillaris*	O	A	A	A
Creeping bent	*Agrostis stolonifera*	F	O		R
Marsh foxtail	*Alopecurus geniculatus*	R	R		R
Meadow foxtail	*Alopecurus pratensis*	R	F	R	O
Wild angelica	*Angelica sylvestris*	F			
Sweet vernal grass	*Anthoxanthum odoratum*	R	F	A	A
False oat-grass	*Arrhenatherum elatius*	A/LD			
Hartstongue	*Asplenium scolopendrium*	R			
Lady fern	*Athyrium filix-femina*	R	R		R
Daisy	*Bellis perennis*		R	R	
Hedge bindweed	*Calystegia sepium*	F			
Wavy bitter-cress	*Cardamine flexuosa*	O	O		R
Cuckoo flower	*Cardamine pratensis*	R	R		
Remote sedge	*Carex remota*		R/LO		
Black knapweed	*Centaurea nigra*	O/LF			
Common mouse-ear	*Cerastium fontanum*	O	O	O	R
Sticky mouse-ear	*Cerastium glomeratum*			R	
Rosebay	*Chamerion angustifolium*	O/LF			
Creeping thistle	*Cirsium arvense*	F	O	R	R
Marsh thistle	*Cirsium palustre*	F	R	R	R
Wild clematis	*Clematis vitalba*	O			
Canadian fleabane	*Conyza canadensis*	O			
Montbretia	*Crocosmia x crocosmiifolia*	R			
Crested dog's-tail	*Cynosurus cristatus*	O	F	F	F
Cocksfoot	*Dactylis glomerata*	F	O	O	O
Wild carrot	*Daucus carota*	O			
Tufted hair-grass	*Deschampsia caespitosa*	O			R

Common name	Latin Binomial	DAFOR			
		F1	F2	F3	F5
Great willowherb	*Epilobium hirsutum*	F/LA	R		
Short-fruited willowherb	*Epilobium obscurum*	F			R
Marsh willowherb	*Epilobium palustre*	R	R		
Hoary willowherb	*Epilobium parviflorum*	O			
Square-stemmed willowherb	*Epilobium tetrapterum*	R	R		R
Field horsetail	*Equisetum arvense*	O/LF			
Hemp agrimony	*Eupatorium cannabinum*	O			
Red fescue	*Festuca rubra*	R/LO		R	O
Meadowsweet	*Filipendula ulmaria*	O	R/LO		
Common cleavers	*Galium aparine*	F			
Marsh bedstraw	*Galium palustre*	O	R		
Cut-leaved cranesbill	*Geranium dissectum*	R			
Herb robert	*Geranium robertianum*	O			
Small sweet-grass	*Glyceria declinata*		R/LO		
Hogweed	*Heracleum sphondylium*	O			R
Yorkshire fog	*Holcus lanatus*	F/LA	A	A	A
Perforate St John's-wort	*Hypericum perforatum*	R			
Square-stemmed St John's-wort	*Hypericum tetrapterum*	R			R
Common cat's-ear	*Hypochaeris radicata*	O	O	O	O
Himalayan balsam	*Impatiens glandulifera*	F/LA			
Jointed rush	*Juncus articulatus*	O/LF	O		O
Toad rush	*Juncus buffonius*				
Compact rush	*Juncus conglomeratus*	F	R		O
Soft rush	*Juncus effusus*	F/LA	F/LA	O/LF	A
Hard rush	*Juncus inflexus*	O/LF			
Meadow vetchling	*Lathyrus pratensis*	F	O	O	O
Perennial rye-grass	*Lolium perenne*	O	O	O	F
Common bird's-foot trefoil	*Lotus corniculatus*				R
Greater bird's-foot trefoil	*Lotus uliginosus*	F/LA	R	R	O
Yellow pimpernel	*Lysimachia nemorum*	R			R
Black medick	*Medicao lupulina*	O			
Hemlock water-dropwort	*Oenanthe crocata*	O			
Water pepper	*Persicaria hydropiper*	R	O/LF	R	R
Redleg	*Persicaria maculosa*	R			
Reed canary-grass	*Phalaris arundinacea*	R/LO			
Timothy	*Phleum pratense*	R	R		R
Ribwort	*Plantago lanceolata*	O/LF	O	R	A
Greater plantain	*Plantago major*	O			
Silverweed	*Potentilla anserina*	O	R	O	R
Tormentil	*Potentilla erecta*		R/LO		O
Creeping cinquefoil	*Potentilla reptans*	F	O	O	O
Selfheal	*Prunella vulgaris*	R	O	R	O
Meadow buttercup	*Ranunculus acris*	O	O	F	F
Lesser spearwort	*Ranunculus flammula*	R	R		
Creeping buttercup	*Ranunculus repens*	A	A	F	F
Creeping yellow-cress	*Rorippa palustris*			R	
Sorrel	*Rumex acetosa*	O	O	O	F
Clustered dock	*Rumex conglomeratus*	F	R	R	F

Common name	Latin Binomial	DAFOR			
		F1	F2	F3	F5
Broad-leaved dock	*Rumex obtusifolius*	O		R	
Common ragwort	*Senecio jacobaea*	F		R	R
Prickly sow-thistle	*Sonchus asper*	O			
Smooth sow-thistle	*Sonchus oleraceus*	R			
Hedge woundwort	*Stachys sylvatica*	R			
Devil's-bit scabious	*Succisa pratensis*				R
Dandelion	*Taraxacum officinale agg.*	F	O	O	O
Goatsbeard	*Tragopogon pratense*	R			
Lesser trefoil	*Trifolium dubium*			R	R
Red clover	*Trifolium pratense*	O	O	F	O
White clover	*Trifolium repens*	F	F	F	A
Coltsfoot	*Tussilago farfara*	O			
Greater reed-mace	*Typha latifolia*	R			
Nettle	*Urtica dioica*	O			
Common valerian	*Valeriana officinalis*	R/LO	R		
Brooklime	*Veronica beccabunga*	R			
Thyme-leaved speedwell	*Veronica serpyllifolia*	R		R	R
Tufted vetch	*Vicia cracca*	R			
Bush vetch	*Vicia sepium*	O			
Violet species	*Viola sp.*				R

Appendix EDP 5
Hedgerow Assessment

Table A5.1: Hedgerow Species Data.

Species		Hedge number and percentage frequency of woody species with presence and abundance of woodland species						
Common name	**Latin Binomial**	**H1**	**H2**	**H3**	**H4**	**H5**	**H6**	**H7**
Field maple	*Acer campestre*							
Sycamore	*Acer pseudoplatanus*				50			
Downy birch	*Betula pubescens*						7	5
Dogwood	*Cornus sanguinea*				10			
Hazel	*Corylus avellana*		95	25	20	30		10
Hawthorn	*Crataegus monogyna*			15	10	25		
Ash	*Fraxinus excelsior*			10	5	25	10	3
Holly	*Ilex aquifolium*	2	5	10		3	5	5
Wild cherry	*Prunus avium*							
Blackthorn	*Prunus spinosa*			25				
Sessile oak	*Quercus petraea*	45				15	70	10
Hybrid oak	*Quercus x rosacea**	10						
Dog rose	*Rosa canina agg.*					2		
Grey, goat & hybrid willow	*Salix cinerea/S. caprea/ S x reichardtii***	6						60
Elder	*Sambucus nigra*				5			
Rowan	*Sorbus aucuparia*						3	2
English elm type	*Ulmus procera*			15				
GAPS		34					5	
Number of Woody species		***5***	***2***	***6***	***5***	***5***	***5***	***7***
Cuckoo pint	*Arum maculatum*		R					
Lady fern	*Athyrium filix-femina*			F	O			
Enchanter's nightshade	*Circaea lutetiana*			O				
Foxglove	*Digitalis purpurea*	R	R		R	O		R
Male fern	*Dryopteris filix-mas*	R	R	O	O	R	R	R
Wild strawberry	*Fragaria vesca*			F				
Herb robert	*Geranium robertianum*		R	R	R			O
Herb benet	*Geum urbanum*		R	R				R
Bluebell	*Hyacinthoides non-scripta*				R			
Tutsan	*Hypericum androsaemum*						R	
Common polypody	*Polypodium vulgare*					R	R	
Greater stitchwort	*Stellaria holostea****			R				
Violet species	*Viola sp.*			O				R
Number of Woodland species		***2***	***5***	***8***	***5***	***3***	***3***	***5***

N.B. Species in bold type are "Woody species" and "Woodland species" as defined by the Hedgerow Regulations"

* although not included in the official list of Woody species this is a hybrid of *Quercus robur* and *Quercus petrea* –both of which are included in the official Woody species list

** These two willow species and their hybrid all occur on this site; it is frequently not possible to satisfactorily identify a particular willow as either of the two species or their hybrid and thus here they are grouped together.

*** Greater stitchwort is included in this list as it is almost invariably associated with old broadleaved woodland and old species-rich hedgerows; its omission from the official list of Woodland species is inexplicable

Table A5.2: Hedgerow Parameters.

Hedgerow parameters	**Hedgerow**						
	H1	**H2**	**H3**	**H4**	**H5**	**H6**	**H7**
Hedgerow length	100m	50m	125m	90m	45m	75m	70m
Adjacent to PROW (Y/N)	N	N	Y	Y	N	N	N
Side surveyed	E	E	N	N/E	N & S	W	W
Average height x width (metres)	20 x 3	10 x 3	2 x 2	2 x 2	15 x 2	12 x 3	4 x 2
Bank / wall > 50% of hedgerow	Y	Y	Y	Y	Y	Y	Y
Ditch > 50% of hedgerow	N	N	N	Y	N	N	Y
< 10% gaps?	N	Y	Y	Y	N	Y	Y
At least one standard tree per 50m of hedgerow (give number)	Y (20+)	N	Y (1.25)	N	Y (1)	Y (3)	N
Parallel hedge within 10m	N	N	N	N	N	N	N
Protected / RDB species	N	N	N	N	N	N	N
Hedgerow connections (score 1 point for each hedgerow, 2 points for ponds and hedgerows)	2	2	2	2	2	2	2

Appendix EDP 6
Bat Surveys Results

Results

Investigations of Bat Roosting – Trees

A6.1 The initial ground level bat roost assessment undertaken in August 2019 of trees within the Application Site identified four mature trees as having high potential to support roosting bats (**T1, T3, T31** and **T40**), with a further 25 trees having moderate bat roost potential (**T7, T8**, **T12, T13**, **T16**, **T17 – T21, T24 – T28, T30, T34, T36, T39, T41, T43, T44, T46, T47** and **T51**), as illustrated on **Plan EDP 4a**.

A6.2 A further three aerial climbing inspections were therefore completed to reconfirm the bat roosting potential of those trees identified during the preliminary ground level assessment. Aerial inspections completed during September 2019, October 2019 and January 2020, to enable the inspection at height of those potential roost features previously identified from the ground, reconfirmed three trees, **T12, T17** and **T26**, as having high potential to support roosting bats. A further six trees, **T8**, **T13, T18**, **T20**, **T39** and **T51**, are considered to have moderate potential to support roosting bats. Trees **T19**, **T21**, **T31, T34**, **T40** and **T46** were downgraded or reconfirmed as having low potential to support roosting bats.

A6.3 The tree inspection results are provided in **Table EDP A6.1** and describes the level of bat roost potential with reference to the Bat Conservation Trust bat survey guidelines.

Table EDP A6.1: Summary of findings of preliminary ground level bat tree inspection in respect of trees identified as having moderate or high bat roost potential, and subsequent confirmed bat roost potential following completion of aerial tree climbing inspections.

Tree number/ group	Species	Findings of the Initial Ground Level Bat Tree Roost Assessment	Findings of Subsequent Aerial Tree Climbing Inspections	Confirmed Bat Roost Potential
T1	Pedunculate Oak (*Quercus robur*)	High bat roost potential initial identified due to thick ivy covering & broken limbs.	No potential bat roost features (PRFs) identified during climbing inspections.	Negligible
T3	Ash (*Fraxinus excelsior*)	High, several stems, thin ivy covering, signs of decay at the base.	No potential bat roost features (PRFs) identified during climbing inspections.	Negligible
T7	Ash (*Fraxinus excelsior*)	Moderate, diseased with wounds in bark.	Scoped out due to being outside survey area, not subject to further aerial inspections.	N/A

Tree number/ group	Species	Findings of the Initial Ground Level Bat Tree Roost Assessment	Findings of Subsequent Aerial Tree Climbing Inspections	Confirmed Bat Roost Potential
T8	Pedunculate Oak (*Quercus robur*)	Moderate, rotten at the base with three wounds at 5m in height.	Butt rot on the stem, south side at 2m.	**Moderate**
T12	Goat willow (*Salix caprea*)	Moderate, splits in bark and two stems.	Tear out on south facing limb 2.5m; wound on west side of stem 4m.	**High**
T13	Goat willow (*Salix caprea*)	Moderate, multi-stemmed with two hazard beams and two wounds.	Hazard bean on the north-west 1.5m; wound on west limb at 3m.	**Moderate**
T17	Pedunculate Oak (*Quercus robur*)	Moderate, rotten at the base and broken branches.	Butt rot on north-west buttress at 0.9m.	**High**
T18	Goat willow (*Salix caprea*)	Moderate, two stemmed with two butt rotten and loose bark.	Two stem cavities on the southern side at 1.5m.	**Moderate**
T19	Goat willow (*Salix caprea*)	Moderate, one hazard beam and wound with loose bark.	A split in a dead limb that is mostly open and has very limited shelter. One old limb with a wound, again with limited shelter.	**Low**
T20	Goat willow (*Salix caprea*)	Moderate, butt rot and loose bark.	Hollow stem accessed from the east at 1.0m; fissure on east limb at 5m; hazard beam on the east side at 2m.	**Moderate**
T21	Pedunculate Oak (*Quercus robur*)	Moderate, loose bark and splits in branches.	One dead limb with some limited shelter, but damp. Very badly flaky that removed easily if disturbed.	**Low**
T24	Pedunculate Oak (*Quercus robur*)	Moderate, removed bark and several healed small wounds.	No PRFs identified during climbing inspections.	Negligible
T25	Ash (*Fraxinus excelsior*)	Moderate, multi-stemmed causing overlapping tree trunks, as well as broken off limbs.	No PRFs identified during climbing inspections.	Negligible
T26	Pedunculate Oak (*Quercus robur*)	Moderate, several branches cut or broken, loose bark and butt rot.	Stem cavity access from the south at 0.5m.	**High**

Tree number/ group	Species	Findings of the Initial Ground Level Bat Tree Roost Assessment	Findings of Subsequent Aerial Tree Climbing Inspections	Confirmed Bat Roost Potential
T27	Pedunculate Oak (*Quercus robur*)	Moderate, loose bark, fallen branches and ivy cover.	No PRFs identified during climbing inspections.	Negligible
T28	Pedunculate Oak (*Quercus robur*)	Moderate, two stemmed with removed bark and broken branches.	No PRFs identified during climbing inspections.	Negligible
T30	Pedunculate Oak (*Quercus robur*)	Moderate, removed bark and broken branches.	No PRFs identified during climbing inspections.	Negligible
T31	Pedunculate Oak (*Quercus robur*)	High, woodpecker hole, lifted bark and broken branches.	Two knot holes in the stem at 5 and 6m high. Small gap between dead wood and callous but with very limited shelter.	**Low**
T34	Pedunculate Oak (*Quercus robur*)	Moderate, thick ivy and rot wounds.	No PRFs identified during climbing inspections.	**Low**
T36	Ash (*Fraxinus excelsior*)	Moderate, dense ivy covering and broken branches.	No PRFs identified during climbing inspections.	Negligible
T39	Goat willow (*Salix caprea*)	Moderate, low tree crown with hole approximately 2m off the ground.	Stem cavity on the south-east side at 2m.	**Moderate**
T40	Black alder (*Alnus glutinosa*)	High, multi-stemmed with large cavity at one of the back facing trunks.	Several holes in the dead vertical limb but with limited shelter.	**Low**
T41	Pedunculate Oak (*Quercus robur*)	Moderate, tear out wound and broken branches.	Scoped out due to being outside survey area, not subject to further aerial inspections.	N/A
T43	Goat willow (*Salix caprea*)	Moderate, wounds and broken branches.	Scoped out due to being outside survey area, not subject to further aerial inspections.	N/A
T44	Silver birch (*Betula pendula*)	Moderate, due to wounds.	Scoped out due to being outside survey area, not subject to further aerial inspections.	N/A
T46	Pedunculate Oak (*Quercus robur*)	Moderate, hole where a limb has broken off and a thin ivy covering.	Features downgraded to low potential only.	**Low**

Tree number/ group	Species	Findings of the Initial Ground Level Bat Tree Roost Assessment	Findings of Subsequent Aerial Tree Climbing Inspections	Confirmed Bat Roost Potential
T47	Pedunculate Oak (*Quercus robur*)	Moderate, crevice where a limb is missing.	No potential bat roost features (PRFs) identified during climbing inspections.	Negligible
T51	Pedunculate Oak (*Quercus robur*)	Moderate, butt rot at the base.	Butt rot in the stem on the east side at 1m.	**Moderate**

Table EDP A6.2: Illustrative photographs of trees confirmed as having low, moderate or high potential to support roosting bats following completion of aerial tree climbing inspections.

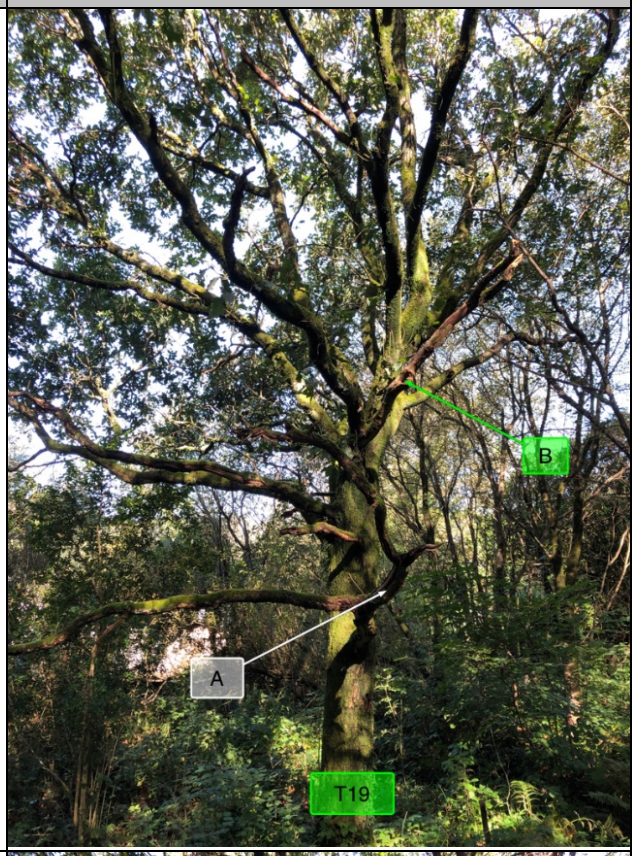
Tree ID	Species	Bat Tree Roosting Potential	Photo
T12	Goat willow (*Salix caprea*)	High	

Tree ID	Species	Bat Tree Roosting Potential	Photo
T17	Pedunculate Oak (*Quercus robur*)	High	
T26	Pedunculate Oak (*Quercus robur*)	High	

Tree ID	Species	Bat Tree Roosting Potential	Photo
T8	Pedunculate Oak (*Quercus robur*)	Moderate	
T13	Goat willow (*Salix caprea*)	Moderate	

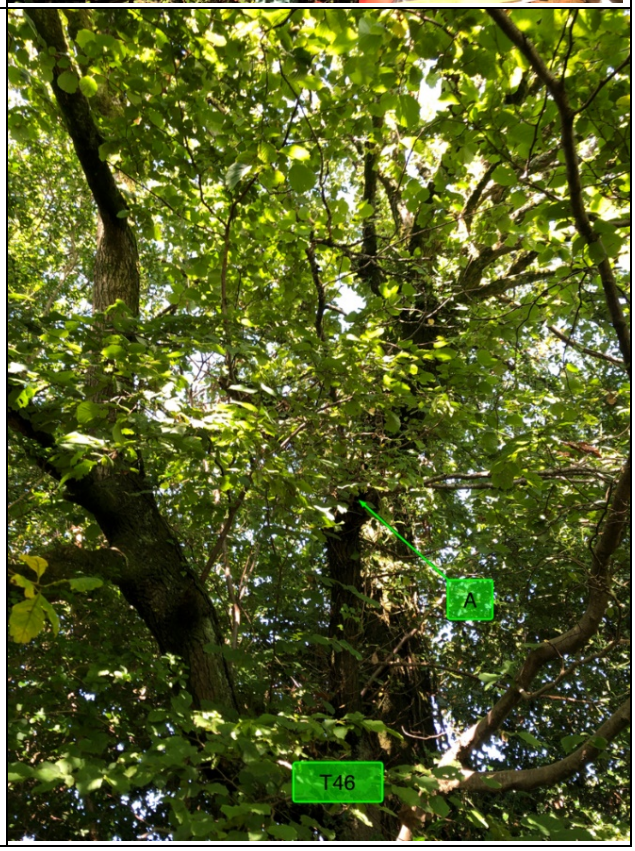
Tree ID	Species	Bat Tree Roosting Potential	Photo
T18	Goat willow (*Salix caprea*)	Moderate	
T20	Goat willow (*Salix caprea*)	Moderate	

Tree ID	Species	Bat Tree Roosting Potential	Photo
T39	Goat willow (*Salix caprea*)	Moderate	
T51	Pedunculate Oak (*Quercus robur*)	Moderate	

Tree ID	Species	Bat Tree Roosting Potential	Photo
T19	Goat willow (*Salix caprea*)	Low	
T21	Pedunculate Oak (*Quercus robur*)	Low	

Tree ID	Species	Bat Tree Roosting Potential	Photo
T31	Pedunculate Oak (*Quercus robur*)	Low	 

Tree ID	Species	Bat Tree Roosting Potential	Photo
T34	Pedunculate Oak (*Quercus robur*)	Low	
T40	Black alder (*Alnus glutinosa*)	Low	

Tree ID	Species	Bat Tree Roosting Potential	Photo
			
T46	Pedunculate Oak (*Quercus robur*)	Low	

Investigations of Bat Foraging/Commuting Activity

Table EDP A6.3: Automated Detector Survey Results August 2019.

Position	Bat Species	Number of Bat Passes Recorded per Night					Total
		08 August	09 August	10 August	11 August	12 August	
A	Common pipistrelle	0	0	0	15	8	23
	Noctule	0	0	0	1	0	1
	Soprano pipistrelle	0	0	0	4	0	4
	Total	**0**	**0**	**0**	**20**	**8**	**28**
B	Common pipistrelle	0	31	33	20	22	106
	Myotis sp.	0	0	0	2	0	2
	Soprano pipistrelle	0	0	0	7	1	8
	Total	**0**	**31**	**33**	**29**	**23**	**116**

Table EDP A6.4: Automated Detector Survey Results September 2019.

Position	Bat Species	Number of Bat Passes Recorded per Night					Total
		02 Sept	03 Sept	04 Sept	05 Sept	06 Sept	
C	Common pipistrelle	294	169	89	90	42	684
	Lesser horseshoe	1	0	0	0	0	1
	Myotis sp.	24	1	6	5	3	39
	Noctule	2	0	0	0	0	2
	Serotine	0	0	1	1	0	2
	Soprano pipistrelle	22	2	17	10	8	59
	Total	**343**	**172**	**113**	**106**	**53**	**787**
D	Common pipistrelle	204	12	187	59	177	639
	Lesser horseshoe	0	0	7	0	3	10
	Myotis sp.	1	0	5	1	0	7
	Noctule	2	0	0	1	1	4
	Soprano pipistrelle	14	2	26	10	6	58
	Total	**221**	**14**	**225**	**71**	**187**	**718**

Table EDP A6.5: Automated Detector Survey Results, late September to October 2019.

Position	Bat Species	Number of Bat Passes Recorded per Night					Total
		27 Sept	28 Sept	29 Sept	30 Sept	01 Oct	
E	Common pipistrelle	17	20	33	83	17	170
	Myotis sp.	1	0	16	3	4	24
	Noctule	0	0	0	0	1	1
	Serotine	0	0	0	1	0	1
	Soprano pipistrelle	1	0	9	1	1	12
	Total	**19**	**20**	**58**	**88**	**23**	**208**
F	Common pipistrelle	2	60	13	8	178	261
	Lesser horseshoe	0	0	0	0	1	1
	Myotis sp.	0	0	1	0	1	2

Position	Bat Species	Number of Bat Passes Recorded per Night					Total
	Noctule	0	0	7	1	1	9
	Soprano pipistrelle	2	7	2	0	4	15
	Total	**4**	**67**	**23**	**9**	**185**	**288**

Table EDP A6.6: Automated Detector Survey Results April 2020.

Position	Bat Species	Number of Bat Passes Recorded per Night					Total
		20 April	21 April	22 April	23 April	24 April	
G	Common pipistrelle	222	335	353	119	56	1085
	Long-eared bat	1	2	4	2	1	10
	Lesser horseshoe bat	0	21	0	0	0	21
	Myotis sp.	6	8	1	2	0	17
	Noctule	0	0	1	0	0	1
	Pipistrellus sp.	0	0	1	0	0	1
	Soprano pipistrelle	1	3	2	2	4	12
	Total	**230**	**369**	**362**	**125**	**61**	**1147**
H	Common pipistrelle	324	456	439	421	170	1810
	Lesser horseshoe bat	0	20	0	1	0	21
	Myotis sp.	4	1	7	3	2	17
	Noctule	1	0	1	0	0	2
	Pipistrellus sp.	1	1	2	0	1	5
	Soprano pipistrelle	15	40	6	2	3	66
	Total	**345**	**518**	**455**	**427**	**176**	**1921**

Table EDP A6.7: Automated Detector Survey Results May 2020.

Position	Bat Species	Number of Bat Passes Recorded per Night					Total
		20 April	21 April	22 April	23 April	24 April	
I	Common pipistrelle	290	263	944	786	146	2429
	Long-eared bat	1	1	1	0	0	3
	Lesser horseshoe bat	1	0	27	56	0	84
	Myotis sp.	3	5	1	3	1	13
	Nathusius Pipistrelle	0	0	1	0	2	3
	Pipistrellus sp.	4	1	0	5	6	16
	Soprano pipistrelle	3	4	20	2	6	35
	Serotine	0	1	0	0	0	1
	Total	**302**	**275**	**994**	**852**	**161**	**2584**
J	Common pipistrelle	78	31	17	387	26	539
	Long-eared bat	0	1	0	2	0	3
	Lesser horseshoe bat	0	0	1	0	0	1
	Nyctalus sp./Eptesicus sp.	0	1	0	0	0	1
	Pipistrellus sp.	3	0	1	23	0	27
	Soprano pipistrelle	5	1	3	5	0	14
	Total	**86**	**34**	**22**	**417**	**26**	**585**

Table EDP A6.8: Summary of findings.

Bat Species	Number of Bat Passes Recorded per Anabat per Deployment Period					Total	% of Total
	August 2019 (A/B)	September 2019 (C/D)	October 2019 (E/F)	April 2020 (G/H)	May 2020 (I/J)		
Common pipistrelle	23/106	684/639	170/261	1239/1912	2429/539	8263	**93.10**
Noctule	1/0	2/4	1/9	1/2	3/0	20	**0.23**
Serotine	0/0	2/0	1/0	0/0	1/1	5	**0.06**
Soprano pipistrelle	4/8	59/58	12/15	13/66	35/14	305	**3.44**
Myotis sp.	0/2	39/7	24/2	17/17	13/0	125	**1.41**
Lesser horseshoe	0/0	1/10	0/1	21/21	84/1	140	**1.58**
Long-eared bat	0/0	0/0	0/0	10/0	3/3	13	**0.15**
Nathusius pipistrelle	0/0	0/0	0/0	0/0	3/0	3	**0.03**
Nyctalus sp./ *Eptesicus* sp.	0/0	0/0	0/0	0/0	0/1	1	**0.01**
Total	**28/116**	**787/718**	**208/288**	**1301/2018**	**2571/559**	**8875**	**100**

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Appendix EDP 7
Phase 1 Arboricultural Impact Assessment Plan & Tree Protection Plan, Treescene

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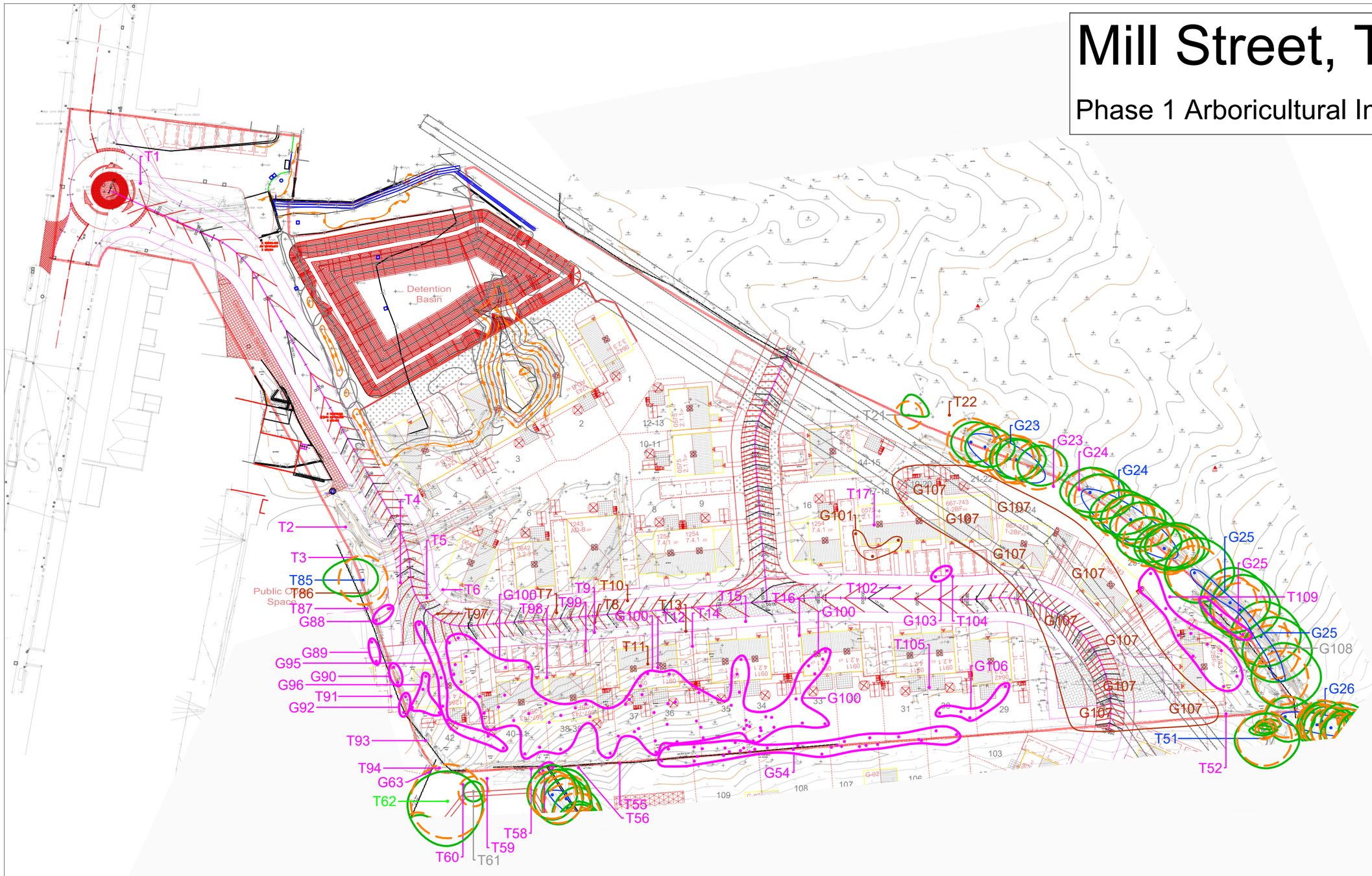
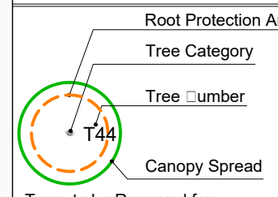
Mill Street, Tonyrefail

Phase 1 Arboricultural Impact Assessment



10m

Arboricultural Impact Assessment



- Trees to be Removed for Arboricultural Reasons
- Trees to be Removed for Development Reasons
- Category A Trees to be Retained
- Category B Trees to be Retained
- Category C Trees to be Retained

Scale 1: 800 @ A3

11/2020

Treescene ARBORICULTURAL CONSULTANTS