



PRELIMINARY ECOLOGICAL APPRAISAL & LDP SITE ASSESSMENT

**Land West of Shirenewton,
Monmouthshire**

**Report
24th April 2020**

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

Every reasonable attempt has been made to comply with BS42020 (Biodiversity: Code of practice for planning and development); the CIEEM Guidelines for Preliminary Ecological Appraisal (CIEEM, 2017), the CIEEM Guidelines for Ecological Report Writing (CIEEM, 2017) and Local Development Plan: Ecological Site Assessments in Monmouthshire 2019/20 (MCC, 2019). If compliance has not been achieved, justification/explanation has been given.

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SUMMARY

- A Preliminary Ecological Appraisal (PEA) (including a Phase 1 Habitat Survey and protected species assessment) and a Hedgerow Regulations Assessment were carried out on land to the west of Shirenewton, Chepstow in Monmouthshire on 8th October 2019. The site is located at an approximate central OS grid reference of ST 476 939.
- The surveys and assessments were required in connection with proposals to include two adjacent candidate sites within the Local Development Plan (LDP) allocation for residential development (referred to collectively as 'the site'). The purpose of this report is to provide information on their ecological value and to inform the allocation and deliverability of candidate sites through the LDP process in line with relevant policy and legislation.
- Candidate site CS0085 Land adjacent to Redd Landes (4.24 ha/10.47 acres) comprises the southern part of a large arable field, with boundary hedgerows to the east, west and south. The land slopes gently down from Earlswood Road towards the north.
- Candidate Site CS0180 Land to east of Ditch Hill Lane (1.13 ha/2.81 acres) comprises the southern part of a larger field, which has been recently cut for silage/haylage, with hedges to the east and west and a small stream along the southern edge. The land slopes gently downwards from its northern edge (which is roughly at the top of a hill) towards the stream.
- A previous walkover survey of CS0085, as part of a larger site, was completed in 2012; the area was considered to have Low value under the LDP guidelines. There are no known previous surveys of site CS0180. A search of nearby planning applications identified several small approved developments nearby; cumulative impacts on key ecological receptors should be considered.
- Habitats Regulations Assessment (HRA) screening of allocated sites will need to consider impacts upon lesser horseshoe bats and the Wye Valley and Forest of Dean Bat Sites Special Area of Conservation (SAC).
- The site's boundary hedges qualify as a Section 7 Priority Habitat in Wales, and several of the hedges are relatively species-rich. The Hedgerow Regulations 1997 assessment identified no Important hedgerows, but it was not possible to determine if hedge H1 qualifies as Important due to the survey being undertaken in autumn, a sub-optimal time of year for botanical assessment. Furthermore, the presence of breeding birds of conservation concern within the hedges also could not be assessed at the time of survey. Other habitats of note include a small watercourse and several mature pedunculate oaks. Any development should be designed to retain all notable habitats, and to minimise unavoidable losses. If proposals will impact hedge H1; further survey is recommended. The other habitats on site are species-poor, common and widespread in the UK and any loss of these habitats would not significantly impact upon the biodiversity of the local area. Nevertheless, to ensure that the development results in a net benefit to biodiversity, in line with planning policy, landscaping should be designed sensitively to mitigate/compensate for this loss.
- Neither of the sites are considered to be of Site of Importance for Nature Conservation quality.

- Existing ecological connectivity is limited to the boundary hedgerows, which connect to other hedgerows in the local area and thence to areas of woodland. The implementation of sensitive hedgerow management would enhance the site's connectivity. Appropriate mitigation measures are recommended to strengthen and enhance connectivity within the landscape.
- A background data search revealed no records of protected or priority species on the site. The survey revealed the site has potential to support badger, foraging and commuting bats, and nesting birds. Further surveys and/or precautionary working methods for these species are recommended.
- There is potential for dormouse, reptiles, great crested newt and brown hare to occasionally pass through or use the site, but given the nature of the habitats present these impacts are unlikely to be significant; precautionary methods and measures for biodiversity mitigation would be required to prevent harm or disturbance.
- Planning policy requires that development projects incorporate biodiversity enhancement elements; suggestions have been made regarding appropriate measures for a residential development based on its position within the landscape, the habitats present and the species that occur or are likely to occur on site.
- Based on the LDP site evaluation guidelines, both of the candidate sites is considered to be of **Medium** value. This report is accompanied by a Site Summary Form for each of the candidate sites (reference nos. CS0085 and CS0180).
- The results of this assessment are valid for a maximum of two years from the date the survey was carried out (October 2019).
- If either of these sites are taken forward as part of the LDP, an Ecological Impact Assessment (EclA) will need to be produced once the development design is finalised. The EclA would include an assessment of the impact of the proposals and proposed avoidance, mitigation, compensation and enhancement measures based on the findings of any necessary further surveys and assessments.

1 INTRODUCTION

1.1 Background

A Preliminary Ecological Appraisal (PEA) (including a Phase 1 Habitat Survey and protected species assessment) and a Hedgerow Regulations Assessment were carried out on land to the west of Shirenewton, Chepstow in Monmouthshire on 8th October 2019, with an approximate central OS grid reference of ST 476 939. The surveys and assessments were required in connection with proposals to include two adjacent candidate sites within the Local Development Plan allocation for residential development as two separate parcels, as follows:

- CS0085 Land adjacent to Redd Landes, Earlswood Road, Shirenewton, Chepstow, NP16 6QP
- CS0180 Land to east of Ditch Hill Lane, Shirenewton, Chepstow, NP16 6RG

These two candidate sites are referred to collectively as 'the site'. In accordance with Monmouthshire County Council's (MCC) Local Development Plan (LDP) site evaluation guidelines (MCC, 2019), this report is accompanied by Site Summary Forms for each of the parcels (reference nos. CS0085 and CS0180).

1.2 Personnel

The survey and reporting were carried out by Anna Dudley MCIEEM. Anna is employed as a Principal Ecologist with Swift Ecology Ltd and is an experienced bat surveyor and holder of a Natural England survey licence for bats, and Natural Resources Wales and Natural England survey licences for great crested newt. Anna graduated from Aberystwyth University in 2005 and has over 13 years' experience working as a consultant ecologist. Anna has undertaken numerous preliminary ecological appraisals, botanical surveys (FISC Level 4), preliminary roost assessments (bats) and surveys for protected species including great crested newt and otter, and has prepared subsequent reports with appropriate recommendations.

1.3 Ecological Context

The site is situated on the western edge of Shirenewton village and comprises two separate parcels of land; Site CS0085 Land adjacent to Redd Landes is 4.24 ha (10.47 acres) in size and CS0180 Land to east of Ditch Hill Lane is 1.13 ha (2.81 acres) in size. Residential housing is present to the south-east and open countryside, a mixture of arable and pasture, is present on all other sides. The site is set within a rural landscape with scattered villages and farmsteads. There are several woodlands within the local area, the closest of which is located approximately 70 m to the north. A small watercourse flows through part of the site; there is a sink at the south-eastern corner of the site into which the water flows, but there is no visible outlet nearby and it does not appear to have any direct (above ground) connectivity to other watercourses in the area. The closest major road (A48) is located approximately 3 km to the south.

The landscape context of the site and its immediate surrounds are illustrated in Figures 1.1 and 1.2 respectively.



Figure 1.1: The location of the site (outlined in red) within the wider area



Figure 1.2: Aerial photo of the site, with the approximate boundaries of the two parcels outlined in red (CS0085 Land adjacent to Redd Landes and CS0180 Land to east of Ditch Hill Lane)

1.4 Purpose of Report

The purpose of this report is to provide information on the ecological value of the site to inform the allocation and deliverability of candidate sites through the LDP process in line with relevant policy and legislation.

The report will detail the potential ecological constraints and opportunities of a proposed development within the site with respect to the designated sites, habitats, protected/priority species and invasive species present, and to set out the requirement for further surveys where appropriate. The report will set out key ecological constraints, design options and the first steps in mitigation, compensation and enhancement measures required to ensure compliance with nature conservation legislation.

The report also provides an assessment of: the site's potential to qualify wholly or partly as a Site of Importance for Nature Conservation (SINC); its connectivity within the landscape; and its overall status. In addition an evaluation is made of the potential impact on the site's biodiversity.

This report does not provide all of the information required by the regulatory body to determine a planning application.

The legal protection and planning policies relevant to the designated sites, habitats or species mentioned in this report are detailed in Appendix 1.

2 METHODS

2.1 Background Data Search

The background data search undertaken in October 2019 comprised the following elements:

- Records of designated sites and protected/priority species and invasive alien (non-native) species within a 1 km radius from South East Wales Biodiversity Records Centre (SEWBReC), search reference code 0190-449.
- A search of the Ancient Woodland Inventory to identify woodland designations (such as Ancient Semi-natural Woodland (ASNW), Planted Ancient Woodland Sites (PAWS) etc.) within a 500 m radius.
- Identification of whether the site falls within the Juvenile Sustenance Zone for the Wye Valley and Forest of Dean Bat Sites Special Area of Conservation (SAC)¹.
- A review of information on the Monmouthshire County Council (MCC) Local Development Plan (LDP) website² to find any previous walkovers undertaken of the site for the adopted LDP.
- A review of the Monmouthshire Ecological Connectivity Assessment² (MECA) to assess the context of the candidate site in providing ecological connectivity. An assessment was made in terms of connectivity of semi-natural habitats/features and also in terms of selected species that might be present in the area as detailed in the MECA and verified by field survey. The assessment of ecological connectivity focuses on the physical component of connectivity and takes a broad, simple approach, focusing on connectivity at a habitat level. The focus is on physical connectivity between key semi-natural habitats and sites within the Monmouthshire settlements identified in the MECA. Where sites are not covered by the MECA, a general, subjective assessment of habitat connectivity within 250 m of the site was made based on the same broad principles of the MECA methodology, but based on a review of aerial photography and the results of the background data search.
- Consideration of any relevant ecological records that have been previously generated by studies to inform planning undertaken on or near the sites (i.e. within a distance where in-combination ecological effects may be considered likely – based on the ecological context and scale of the LDP site).

2.2 Field survey

2.2.1 General

A Preliminary Ecological Appraisal, comprising a Phase 1 Habitat Survey and protected species assessment, was undertaken, following standard methods as described in the Guidelines for Preliminary Ecological Appraisal (CIEEM, 2017), and the Phase 1 Habitat Survey Methodology (JNCC, 2010). All hedgerows were assessed against the Hedgerow Regulations 1997 (ecological criteria only) to identify any important hedgerows within the site. Hedgerows and trees were also assessed against the criteria in MCC's LDP site evaluation guidelines (2019).

¹ Lesser horseshoe roost Juvenile Sustenance Zone = within 600 m of a maternity roost (SSSI)

Greater horseshoe roost Juvenile Sustenance Zone = within 1 km of a maternity roost (SSSI)

² Information available from: <https://www.monmouthshire.gov.uk/planning-policy/candidate-sites/ecological-site-assessments-of-candidate-sites/>

These surveys were undertaken on 8th October 2019 by Anna Dudley of Swift Ecology Ltd. Weather conditions at the time of the survey are shown in Table 2.1. The survey covered all land within the red line boundary (see Figure 3.1, Section 3). Adjacent habitats were also briefly assessed.

Table 2.1: Survey conditions

Date	Approximate start time	Weather conditions
08.10.19	11:30	A cool (14°C), and windy morning with 80 % cloud and light rain showers.

2.2.2 Phase 1 Habitat Survey

A Phase 1 Habitat Survey typically comprises the following elements, as necessary depending on the nature of the site:

- Habitat descriptions for each separate habitat type and features of nature conservation interest including priority habitats;
- Target notes to identify particular areas of interest or concern, field signs or sightings of protected or priority species, and the presence of veteran/over-mature trees; and
- Plant species lists, if appropriate. In this case because the survey was completed late in the survey season, when not all plants are apparent or easily identifiable, a species list was not compiled.

All information was mapped and recorded as target notes where appropriate (see Figure 3.1 and Table 3.2, Section 3). The locations of all habitat/site boundaries, trees etc. are approximate.

2.2.3 Hedgerow Regulations Assessment

A total of five linear features defined as ‘hedgerows’ were subject to survey. All hedgerows within the site are more than 30 years old and more than 20 m in length. All hedgerows were surveyed in detail using the guidelines published by DEFRA in 1997³ in order to enable the identification of Important hedgerows within the meaning of the *Hedgerow Regulations 1997*, wildlife and landscape criteria 6-8. The locations of the hedgerows are illustrated on Figure 3.1 in Section 3.

Standard information was collected so that each hedgerow could be individually evaluated. This contained the following elements:

- *Length of hedgerow recorded.* A hedgerow is deemed to end where it meets (whether by intersection or junction) another hedgerow or feature such as a wood or pond.
- *A count of the woody species in an average 30 m stretch of hedge.* If a hedgerow was less than 30 m long, the entire hedgerow was surveyed. If a hedgerow was between 30 m and 100 m long, the middle 30 m stretch was surveyed; if the hedgerow was between 100 m and 300 m long two 30 m stretches were surveyed (the middle of each half of the hedge) and the results averaged; and if the hedgerow was over 300 m long, three 30 m stretches were surveyed (the middle of each third of the hedgerow) and the results averaged. Only species listed under Schedule 3 of the Regulations were used for the purposes of

³ The Hedgerow Regulations 1997, A guide to the Law and Good Practice, DEFRA, 1997

evaluation. Additional woody species, generally non-native species such as sycamore *Acer pseudoplatanus*, were also noted along the length of the hedgerow but not included within the evaluation.

- *Observations of hedgerow features.* Hedgerow features specified in the Regulations include the following:
 - a bank, or wall along 50% of the length of the hedge;
 - a ditch along 50% of the length;
 - whether gaps total less than 10% of the length;
 - one or more standard trees per 50 m of hedge;
 - a parallel hedge within 15 m of the hedge;
 - three or more woodland herbs⁴ in the whole hedge; and
 - connections with hedges, woods and ponds scoring four or more points⁵.
- *Noting of circumstances that modify thresholds for hedgerow evaluation.* Circumstances modifying the thresholds that determine whether or not a hedge is an Important hedgerow (in respect of woody species counts and hedgerow feature totals) include the following:
 - footpaths, bridleways, or byways are adjacent to the hedge (these hedgerows require a combination of fewer woody species and hedgerow features to qualify as Important); and
 - location in northern counties (this reduces the number of woody species necessary to qualify as Important by one, but is not relevant here).

Under the Hedgerow Regulations (1997) Part II, a hedgerow qualifies as an Important Hedge under wildlife and landscape criteria 6-8 if it complies with any of the following:

- It contains any species listed in *Part 1 of Schedule 1, Schedule 5 or Schedule 8* of the *Wildlife and Countryside Act 1981*.
- It contains any birds categorised as a declining breeder (category 3) in 'Red Data Birds in Britain' 1990.*
- It contains any species categorised as 'endangered', 'extinct', 'rare' or 'vulnerable' in any of the British Red Data Books.
- It contains seven or more *Schedule 3* woody species in an average 30 m stretch.
- It contains six *Schedule 3* woody species in an average 30 m stretch and also has three or more hedgerow features.
- It contains five *Schedule 3* woody species in an average 30 m stretch and also has four or more hedgerow features.
- It contains six or more *Schedule 3* woody species in an average 30 m stretch and also has one of the four significant woody species as listed in the *Regulations* (these are black poplar *Populus nigra* ssp. *betulifolia*, wild service tree *Sorbus torminalis*, small-leaved lime *Tilia cordata* and large-leaved lime *Tilia platyphyllos*).
- It is adjacent to a footpath, bridleway or byway, contains at least four woody species, and has two or more hedgerow features (excluding a parallel hedge or connections).

⁴ Species listed in *Schedule 2* of the Regulations.

⁵ According to protocols defined in the Regulations: connecting hedgerows score 1 connection point each, woodland or ponds score 2 connection points each

* The 'Red Data Birds in Britain' (1990) has now been superseded by the Birds of Conservation Concern 4 (BoCC4) list, compiled by the British Trust for Ornithology in 2015 following an extensive and fully endorsed review of the conservation status of 244 bird species found regularly in the UK. However, the Hedgerow Regulations have not yet been updated to reflect this change. In order to ensure current value of the results of this hedgerow survey, we have used the currently accepted 2015 BoCC4 rather than the 1990 'Red Data Birds in Britain' to inform decisions whether any of the hedgerows are Important due to containing any birds categorised as a declining breeder. Only 'red-listed' birds in the BoCC4 list have been used to determine Important status, as this equates to 'Category 3' in the 'Red Data Birds in Britain'. 'Red-listed' bird species in BoCC4 have the highest conservation priority.

Hedgerows were reported using a standard form. The information is summarised in Section 3.3.2 and full details of all hedgerows are provided in Appendix 3.

2.2.4 Protected species assessment

The suitability of habitats for protected animal species was assessed at the same time as the Phase 1 Habitat Survey and incidental evidence of such species was recorded if encountered. Species that might be expected to be present in the geographic location include bats, badger *Meles meles*, dormouse *Muscardinus avellanarius*, otter *Lutra lutra*, water vole *Arvicola amphibius*, nesting birds, reptiles, great crested newt *Triturus cristatus* and white-clawed crayfish *Austropotamobius pallipes*.

Bats

There are no buildings within the proposed development area. The trees on site were briefly assessed from ground level for their potential to support roosting bats. Habitat was assessed for its bat foraging and commuting potential.

Dormouse

Habitat was assessed for its suitability for dormouse based on vegetation structure, connectivity and species composition. A full dormouse survey was not undertaken.

Otter, water vole and white-clawed crayfish

Habitat on the site was assessed for its suitability to support otter, water vole and white-clawed crayfish. Any incidental signs were recorded if they were encountered. A full survey for these species was not undertaken.

Badger

Habitat was assessed for its suitability for badger foraging and sett digging. Any incidental signs of badgers, such as setts, latrines, foraging signs, or footprints, were recorded if they were encountered. A full badger survey was not undertaken.

Nesting birds

Habitats on site were assessed for their suitability for breeding birds, including trees, hedgerows and arable land. Any incidental sightings, or active/old nests were recorded.

Reptiles

The suitability of habitats on site for common reptiles (adder *Vipera berus*, grass snake *Natrix helvetica*, common lizard *Zootoca vivipara* and slow-worm *Anguis fragilis*) was assessed, based on factors such as the quality of the foraging resource, the presence of suitable sites for basking, and the presence of refugia for shelter and hibernation. Detailed reptile surveys were not undertaken.

Great crested newt

Great crested newts use terrestrial habitat within 500 m of breeding ponds; if used by the species for resting, such habitat is protected. Terrestrial habitats on site were therefore assessed for their potential to support the species, based on factors including vegetation structure and composition, the availability of shelter and foraging resources. The proximity of ponds and intervening habitats are also an important factor in determining the likelihood of this species being present on site.

2.2.5 Other priority species

General habitat suitability and incidental sightings of other priority species⁶, including species of principal importance for the purpose of maintaining and enhancing biodiversity in Wales (Environment (Wales) Act 2016) and Local Biodiversity Action Plan species were noted. However, the presence of many priority species cannot be confirmed without targeted surveys (e.g. lower plants, insects) and thus the type and quality of habitats present (e.g. freshwater) will be used to help assess the likelihood of such species, being present. Species particularly considered as part of this assessment will be mostly limited to mammals, reptiles, amphibians, birds and more easily visible/identifiable plants and insects likely to be present in the geographical region, and which could potentially occur on the site.

2.2.6 Invasive alien plant species

Any incidental sightings of invasive alien plant species were recorded if encountered. A full survey was not undertaken.

2.2.7 Limitations

It should be noted that any survey based on a single site visit will miss a significant proportion of the species present on or using the site. As such this report includes an assessment only of the likely presence of protected and priority species.

Phase 1 Habitat Survey

October is not an optimal time of year for Phase 1 Habitat Survey because many plants are not in flower and/or leaf and so may not be easily identified. This is not considered to be a significant constraint to this report as the basic Phase 1 Habitat types can be distinguished at this time of year, and this report constitutes an initial assessment of habitats only, not a detailed botanical study.

Phase 1 Habitat Survey was designed to enable a broad-brush survey of large areas. As such, available habitat codes do not always reflect the exact habitats present within sites surveyed at a small scale. Where an exact habitats match is not available, the nearest 'fit' has been used and the habitat descriptions provide more detail.

⁶ Priority species, as defined within Chartered Institute of Ecology and Environmental Management (2017). *Guidelines for Preliminary Ecological Appraisal*. CIEEM, Winchester.

Hedgerow Regulations Assessment

October is also not an optimal time of year to complete a Hedgerow Regulations Assessment. At this time of year it is not possible to determine whether hedgerows are used by red-listed breeding birds and thus some Important hedgerows may have been missed. Whilst woody species within unmanaged hedges are easily identifiable in October, it is more difficult to identify them within recently flailed hedges. Furthermore, many of the herbaceous woodland species listed as an 'associated feature' are spring flowers and will not be apparent at this time.

Hedge H1 had an average of five Schedule 3 woody species per 30 m, three associated features and one Schedule 2 woodland species at the time of survey; if two other woodland species are present then this hedge would qualify as Important. Furthermore, the recent flailing of the hedge prior to the survey may have obscured the presence of further woody species. Although some Schedule 2 woodland species were noted in hedges on site it is not considered other Important hedgerows were missed because Schedule 2 woodland species were not apparent, as they lacked sufficient other associated features to qualify.

2.3 Site Assessment

2.3.1 Site of Importance for Nature Conservation Assessment

The results of the field survey were used to assess the condition of the site with respect to its potential to qualify as a Site of Importance for Nature Conservation (SINC) using the criteria in the '*Guidelines for the Selection of Wildlife Sites in South East Wales*', which have been adapted for Monmouthshire⁷.

2.3.2 Ecological Connectivity

The value of the site was considered in terms of habitat connectivity/ecosystem resilience using best available guidance and field survey data.

2.3.3 Overall Biodiversity Evaluation

Using the results of the desk-based survey and field assessments, an evaluation of status or impact of the biodiversity of the site shall be made and classified as either: High, Medium or Low value, in accordance with MCC's LDP site evaluation guidelines (2019).

2.3.4 Site Summary Form

In accordance with MCC's LDP site evaluation guidelines (2019), a separate Site Summary Form has been completed and is provided to accompany this document (reference nos. CS0085 and CS0180).

⁷ Gwent Wildlife Trust (2004). *Guidelines for the Selection of Wildlife Sites in South Wales*. Prepared by Gwent Wildlife Trust on behalf of The South Wales Wildlife Sites Partnership.

Gwent Wildlife Trust (2009). *Revisions to Selected Sections of the Guidelines for the Selection of Wildlife Sites in South Wales to give Special Regard for Monmouthshire*.

3 BASELINE ECOLOGICAL CONDITIONS

3.1 *Review of Historical Ecological Data and Assessments*

3.1.1 Previous Walkover Surveys

Available information on the Monmouthshire County Council (MCC) Local Development Plan (LDP) website indicates that a previous walkover survey was completed in April 2012 of the large arable field (site reference ASN032, 8.19 ha) which includes Candidate Site CS0085 (BSG, 2012).

The survey identified the presence of three Sites of Importance for Nature Conservation directly adjacent/within 250 m of the site (Shirenewton Meadows, Mynydd-Bach Meadows and Batwell Meadows) and highlighted the potential presence of bats, great crested newt and nesting birds. No notable habitats were identified and ASN032 was not considered to meet the criteria for local designation as a SINC. Site ASN032 was considered to be of 'Low Value'.

3.1.2 Monmouthshire Ecological Connectivity Assessment (MECA)

The settlement of Shirenewton was not included in the MECA.

A brief assessment of the connectivity of the site using mapped data, aerial photography and the results of the background data search follows.

Habitat connectivity

The boundary hedgerows on site (most of which extend beyond its boundaries) provide direct links to an area of ancient woodland approximately 90 m to the north. The wood has connections to other ancient woodlands nearby, although this connectivity is not direct, with local and B-roads in between. The site also has connectivity to the wider hedgerow network.

There is no apparent connectivity between the stream on site and wider river catchments, as it enters a sink at its eastern end and it is not clear if or where it joins to other field drains present in fields to the east, which ultimately flow north-eastwards to join Mounton Brook. The routes of these watercourses are discontinuous, as they disappear underground in several places. Ultimately, Mounton Brook discharges into the Severn Estuary approximately 6.5 km to the south-east; the Severn Estuary is a site of international conservation importance (with Ramsar, Special Area of Conservation (SAC) and Site of Special Scientific Interest (SSSI) designations).

There are a series of grassland sites (designated as SSSIs and SINCs) to the north and east of the site, with the closest located on the other side of Ditch Hill Lane from the site, and two further designated sites (SINCs) with notable grassland habitats to the west (350 m away). The site supports only limited areas of grassland, and thus has limited opportunities to provide ecological connections for grassland habitat within the landscape.

There are no significant man-made linear features within the local landscape (e.g. dual carriageways and motorway verges, railway lines etc.) to provide ecological connectivity within the locality.

Species-specific connectivity

The hedgerows on site are likely to provide existing connectivity for species (including dormouse and bats) to other notable features nearby, such as woodlands.

3.1.3 Nearby Planning Applications

A total of 53 planning applications have been submitted to Monmouthshire Council within the last five years near to the site; no applications have been submitted for the site itself. Applications were typically for small-scale 'householder' developments, such as alterations and extensions to residential dwellings and demolition and erection of replacement dwellings/outbuildings, small-scale housing developments and works to trees. Of the submitted applications, seven were accompanied by an ecological assessment, as detailed below in Table 3.1.

Table 3.1: Summary of ecological information from nearby planning applications

Application reference	Status	Ecological information submitted	Habitats/Species Present
DC/2016/00566	Approved	Bat survey	Species present: • Bat species (roosting) ○ pipistrelle <i>Pipistrellus</i> sp. droppings only
DC/2016/01200	Approved	Bat survey	Species present: • Bat species (roosting) ○ common pipistrelle <i>Pipistrellus pipistrellus</i> ○ soprano pipistrelle <i>P. pygmaeus</i>
DM/2018/02066	Awaiting decision	Preliminary Ecological Appraisal	Habitats present: • Hedgerows • Arable field margins Species present: • Reptile presence/absence survey needed
DC/2015/00688	Approved	Not available but referred to in Biodiversity Officer comments	Habitats present: • Hedgerows Species present: • N/A
DM/2019/00822	Approved	Bat surveys	Species present: • Bat species (roosting) ○ soprano pipistrelle
DC/2017/01122	Approved	Preliminary Ecological Appraisal	N/A
DM/2018/02087	Approved	Bat survey	N/A

3.2 Designated Sites & Ancient Woodlands

3.2.1 Designated Sites

SEWBrEC provided details of three statutory designated sites and nine non-statutory designated sites within the 1 km search radius.

There is one European designated site within 1 km of the site:

- Wye Valley and Forest of Dean Bat Sites SAC: Located 640 m to the north-east at its closest point, the site is designated for the presence of a hibernation roost for lesser horseshoe bats *Rhinolophus hipposideros* (Annex II species). This site is also designated as Mwyngloddfa Mynydd-Bach SSSI.

Of the two nationally designated sites within the 1 km search radius (Llwyn y Celyn Wetland SSSI and Mwyngloddfa Mynydd-Bach SSSI), neither are located within 500 m of the site.

Of the nine locally designated sites, four are located within 500 m of the site:

- Mynydd-Bach Meadows SINC: Located 10 m to the north-east, it comprises a large field of species-rich neutral grassland.
- Shirenewton Meadows SINC: Approximately 80 m west of the site, it supports a range of neutral and marshy grassland communities, with small areas of dry acidic grassland and scrub.
- Batwell Meadows SINC: Approximately 350 m north-west, it comprises three fields of species-rich neutral grassland.
- Land off Usk Road/Wayside SINC: Located 470 m to the north-east, this site supports species-rich neutral grassland and forms an important ecological link to other SINC and SSSI grasslands in the area.

The site is also located approximately 140 m south of the Wye Valley Area of Outstanding Natural Beauty.

Further details of the designated sites within a 1 km radius are provided in Table A2.1, Appendix 2.

Juvenile Sustenance Zones for the Wye Valley and Forest of Dean Bat Sites SAC

Candidate site CS0180 is located 640 m to the south-east of the nearest parcel of the Wye Valley and Forest of Dean Bat Sites SAC (Mwyngloddfa Mynydd-Bach SSSI). This SSSI is designated as a hibernaculum for lesser horseshoe bats, but is also used throughout the year by smaller numbers of adult and immature lesser horseshoe bats. Should any lesser horseshoe bats use Mwyngloddfa Mynydd-Bach SSSI as a maternity roost, the site is not located within the Juvenile Sustenance Zone for this species. Candidate site CS0085 is located 740 m to the south-east of the nearest parcel of the Wye Valley and Forest of Dean Bat Sites SAC and is also outside the Juvenile Sustenance Zone for lesser horseshoe bats.

SEWBRc did not provide any records of greater horseshoe bats within the 1 km search radius.

3.2.2 Ancient Woodlands

The Ancient Woodland Inventory identified the following ancient woodland parcels within 250 m and 500 m radii of the site:

- Within 250 m radius:
 - Two parcels of Ancient Semi Natural Woodland (ASNW), unique IDs 9085 and 11660.
- Between 250 m and 500 m:
 - Six parcels of Ancient Semi Natural Woodland, unique IDs 9085 (also within 250 m radius), 9086, 11660 (also within 250 m radius), 14890, 14888 and 14889.

- Three parcels of PAWS, unique IDs 39872, 41300 and 41524.
- One parcel of Ancient Woodland Site of Unknown Category, unique ID 50468.

Further information is provided in Table A2.2 in Appendix 2.

3.3 Habitats

3.3.1 Phase 1 Habitat Assessment

The site comprises the southern portions of two larger fields. The eastern field abuts Ditch Hill Lane on its eastern edge, and has recently been harvested for silage/haylage. The western field abuts Earlswood Road to the south and forms part of a large arable field, with stubble from the recently harvested crop. A public footpath runs along the northern edge of each parcel of land. The habitats on site are illustrated on Figure 3.1, are further described below and are shown on Plates 3.1 to 3.13.

A2.1 Dense scrub

There is a strip of dense scrub growing on a bank between the fence of a residential dwelling (to the south) and the stream (to the north). This scrub is dominated by bramble *Rubus fruticosus* agg., but also includes scattered rose *Rosa* sp., willow *Salix* cf. *cinerea*, blackthorn *Prunus spinosa* and some pedunculate oak *Quercus robur* saplings.

A further area of bramble scrub is present in the eastern corner of the cropped field, growing at the base of a telegraph pole.

A3.1 Scattered trees

There is a group of three pedunculate oaks near the southern edge of the eastern field. Two of these trees are mature specimens (Target Note 1), whilst the third is early-mature. These trees appear to be in good condition.

B6 Poor semi-improved grassland

A strip of species-poor grassland is present along the edge of the stream, and beneath the group of pedunculate oak trees. The unmanaged sward is dominated by a few grass species (with frequent Yorkshire-fog *Holcus lanatus*, common bent *Agrostis capillaris*, creeping bent *A. stolonifera* and cock's-foot *Dactylis glomerata*, and occasional sweet vernal grass *Anthoxanthum odoratum*), with scattered rushes (soft rush *Juncus effusus* and compact rush *J. conglomeratus*) and hairy sedge *Carex hirta*. Forbs are limited within the sward and include infrequent ribwort plantain *Plantago lanceolata*, great willowherb *Epilobium hirsutum*, bush vetch *Vicia sepium*, creeping buttercup *Ranunculus repens* and docks *Rumex* spp. There is also some low bramble growing through the sward.

A small patch of species-poor grassland is present in the eastern corner of the large arable field, adjacent to the bramble scrub. This area is dominated by coarse grasses (cock's-foot, creeping bent and false oat-grass *Arrhenatherum elatius*) with few forbs, such as cow parsley *Anthriscus sylvestris* and cut-leaved crane's-bill *Geranium dissectum*. The grassy margins of both arable fields comprise narrow strips of species-poor grassland (<1 m wide); these features were too narrow to map, but comprise similar species to those described above.

C3.1 Tall ruderal vegetation

A small patch of nettle dominated vegetation is present to south of the bramble scrub. Occasional great willowherb is also present in this area.

G2 Running water

There is a small stream on site; arising near the northern end of hedge H3, it flows north-eastwards for c. 20 m and then eastwards along the southern edge of the eastern field. This stream enters a sink at the eastern corner of the site, and reference to mapped data⁸ indicates that it disappears underground for some way after this.

At its southern end it is shaded by a dense conifer hedge in an adjacent garden, and by the native field hedge (H3) to the west. The channel is less than 0.25 m wide with shallow banks; mosses and ivy *Hedera helix* comprise the only scattered ground flora, and there is no emergent, marginal or aquatic vegetation. As the stream flows eastwards the width of the stream increases slightly, to a maximum of 0.5 m wide, and it is not shaded by overhanging vegetation. In the south-western corner of the eastern field, the shallow banks of the stream have recently been disturbed, probably during recent habitat management to cut down nettle/bramble vegetation along its banks. The rest of the banks are undisturbed, and quite steep in places. There is a dense patch of hemlock water-dropwort *Oenanthe crocata* and fool's-water-cress *Helosciadium nodiflorum* towards the eastern end of the channel, and marginal vegetation includes rushes and creeping buttercup, which are also recorded within the adjacent grassy margin. Occasional fern *Dryopteris* sp. is present on the steeper banks. The stream had a moderate flow at the time of survey and the water is shallow throughout (no more than 10 cm deep).

J1.1 Arable

The eastern field comprises permanent grassland, which had been recently harvested for silage/haylage. The sward includes perennial ryegrass *Lolium perenne*, timothy-grass *Phleum pratense*, creeping bent and Yorkshire-fog. Forbs are rare within the sward and include occasional broad-leaved dock *Rumex obtusifolius* and creeping buttercup.

The western field comprises recently harvested oil-seed rape *Brassica napus*; there are few weeds within this field, where present they include very occasional maple seedlings *Acer* sp., nettle, and clover *Trifolium* sp.

J2 Boundaries

Native hedgerows form the eastern and western boundaries of the eastern field (H1 and H2 respectively), and the eastern (H2, H3), southern (H4) and western (H5) boundaries of the western field. Hedges H1, H2 and H5 extend northwards out of the survey area, with roughly half of H1 and H2 within the survey area. Hedge H5 has several gaps in its length and a large gap (c. 24 m long) means that this hedge is not directly connected to the woodland at the northern end of the arable field. In contrast, hedges H1 and H2 have direct connectivity with this woodland.

Hedges H1 and H2 have a good mix of woody species, and are considered to be species-rich. Hedge H1 is frequently cut and has two mature standard pedunculate oaks, only one of which is located within the site; ground flora includes dog's mercury *Mercurialis perennis* and frequent

⁸ <http://lle.gov.wales>

bracken *Pteridium aquilinum*. It appears that only the sides of hedge H2 are trimmed, and small gaps are developing along its length. There are some multi-stemmed early-mature ash trees growing towards its southern end.

Hedge H3 has a single early-mature horse chestnut *Aesculus hippocastanum* towards its southern end. The hedge includes a mix of shrubs dominated by native species, a few of which might be introductions from the adjacent garden, such as cherry laurel *Prunus laurocerasus* and hornbeam *Carpinus betulus*.

Hedge H4 is a road-side hedge subject to frequent management. It is dominated by hawthorn, with bramble almost obscuring the woody species in places. The central section of this hedge has a more diverse range of woody species. A single mature pedunculate oak is present near the western end. Ground flora includes a polypody fern *Polypodium cf. vulgare*.

Hedge H5 is unmanaged and has several gaps, of which some are up to 11 m long. The hedge has a mix of a few native woody species but no standard trees.

The hedges are described in more detail in Section 3.3.2 and Appendix 3.

The southern boundary of the eastern field is formed by a fence, although this is obscured from view by dense scrub towards its eastern end.



Plate 3.1: Dense scrub on bank of stream, eastern field



Plate 3.2: Bramble patch at base of telegraph pole, western field



Plate 3.3: Group of pedunculate oaks on northern bank of stream, with strip of species-poor grassland beneath



Plate 3.4: View of stream where it first appears above ground, parallel to hedge H3



Plate 3.5: Eastern end of stream, where it disappears into a sink by the road



Plate 3.6: Silage field



Plate 3.7: Recently harvested arable field



Plate 3.8: Hedge H1



Plate 3.9: Hedge H2, on left



Plate 3.10: Hedge H3, northern end, with overhanging conifer hedge visible



Plate 3.11: Hedge H4 at western end



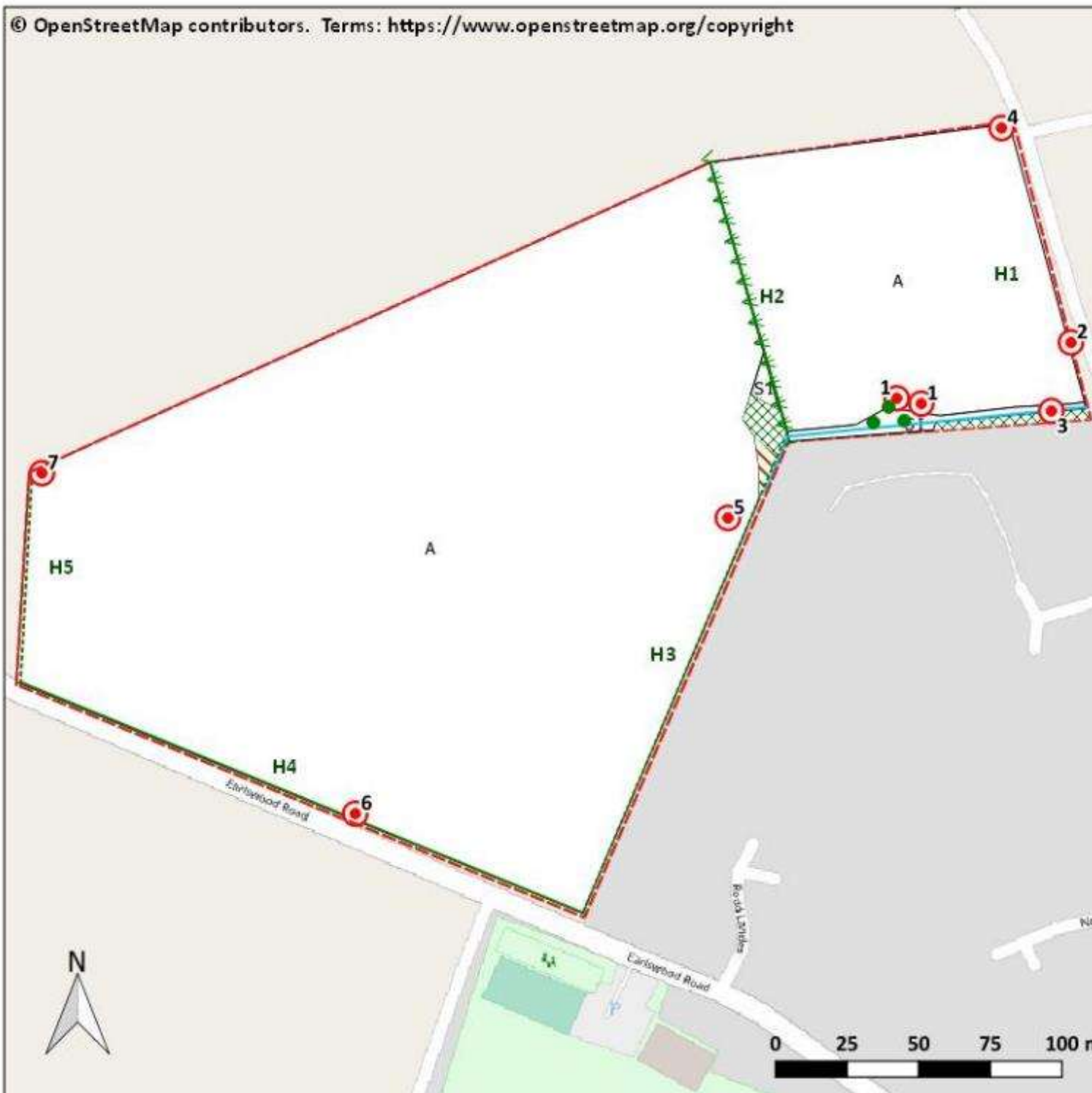
Plate 3.12: Hedge H5, southern end



Plate 3.13: Northern end of H5 (outside site), a large gap severs it from the rest of the hedge along the western edge of this field.

Table 3.2: Target notes (all relate to Figure 3.1)

Target note	Description
1	Mature pedunculate oak, diameter at breast height (dbh) c. 2.2 m, in good condition.
2	Mature pedunculate oak in hedge, dbh >2 m, in good condition. Tree has some light ivy covering.
3	Marginal vegetation within stream, including fool's-water-cress and hemlock water-dropwort.
4	Field entrance, with bare ground and a few species indicative of disturbed habitats, such as annual meadow-grass <i>Poa annua</i> and pineappleweed <i>Matricaria discoidea</i> .
5	Badger latrine by field edge, with at least six dung pits spread over about 10 m. Dung of varying ages including some that appears to be fresh (i.e. no more than a day or two old).
6	Badger latrine by field edge, with at least five dung pits spread over about 4 m. Dung does not appear to be very recent.
7	Badger latrine by field edge, with at least four dung pits, including some relatively fresh looking dung.



Key

- Site boundary
- ⊙ Target notes
- Scattered trees - broad-leaved
- Running water
- Species-poor defunct hedge
- + + + Species-rich hedge with trees
- + + + Species-poor hedge with trees
- x x x Dense/continuous scrub
- SI Poor semi-improved grassland
- / / / Tall ruderal vegetation
- A Arable



Figure 3.1 Phase 1 Habitat Map

CS0085-CS0180 Land West of
Shirenewton

October 2019

3.3.2 Hedgerow Regulations Assessment

Background data search

SEWBrEC hold no records relating to the site's hedges.

Hedgerow Survey

All five hedgerows were surveyed to determine whether they meet the wildlife and landscape criteria for an Important hedgerow, as described in Section 2.2.3. Hedge H3 abuts three residential gardens, but appears to be located on the field side of the boundary, and as such it was included within the assessment. None of the hedges are considered to be Important under the Wildlife and Landscape criteria of the *Hedgerow Regulations 1997*.

Hedges H1 and H2 both support five woody species per 30 m section, but lack sufficient associated features to qualify. However, the value of Hedge H1 (with five woody species per 30 m and three associated features – hedge bank, parallel hedge, no gaps) may have been underestimated by this assessment, as the recent cut may have obscured the presence of further woody species, and it is possible the hedge bank supports additional Schedule 2 woodland species that would only be found if surveyed during spring.

Hedges H3, H4 and H5 all have less than five woody species per 30 m section.

It is possible that some of these hedgerows qualify due to their use by a bird species of conservation concern; however, it was not possible to assess this at the time of survey. A flock of farmland birds, which included yellowhammer *Emberiza citrinella*, was seen foraging on the stubble of the harvested oil-seed rape during the survey, confirming the presence of at least one bird of conservation concern associated with hedgerows in the local area.

A summary of each of the hedgerows is provided in Table 3.3; more detailed hedgerow descriptions are provided in Appendix 3. The locations of all hedges are illustrated on Figure 3.1 and photos are provided in Plates 3.8 to 3.13.

Table 3.3: Hedgerow summary table (wildlife and landscape criteria)

Hedge Number	Important / Not Important	Presence of Public Right of Way (PRoW) or Qualifying Species (QS)	Number of Features	Average Number of Woody Species	Number of Schedule 2 Herbs	Presence of BoCC4 'Red-Listed' Breeding Bird Species*
1	Not important†	-	2	5	1	-
2	Not important	-	1	5	0	-
3	Not important	-	1	4	0	-
4	Not important	-	2	3	1	-
5	Not important	-	1	3.7	0	-

* Could not be assessed at the time of year the survey was completed.

† Assessment inconclusive due to time of year survey completed.

Hedgerow H1

Approximately half this hedge is within the site, where it was recently trimmed to 1 m high. At its very northern end (outside of the site) it is only trimmed to the sides and reaches c. 4 m high. There are two standard mature pedunculate oaks, of which only one is within the site. The

hedgerow comprises a relatively diverse mix of woody species, with seven Schedule 3 woody species recorded along its entire length, and an average of five per 30 m section. Honeysuckle *Lonicera periclymenum* grows through the hedge. Ground flora includes dog's mercury *Mercurialis perennis* (a notable woodland flora species), bracken and hedge bedstraw *Galium album*. At its northern end this hedge connects to a woodland, but it has no connections to other hedges.

Hedgerow H2

Approximately half of this hedge is within the site. It is trimmed to the sides only, creating a hedge <1 m wide, but c. 4 m tall, with some early mature ash trees at its southern end. Due to this management, the hedge is developing several small gaps along its length. The hedge also has gaps for a field gate and stile. It supports a relatively diverse mix of woody species, with eight Schedule 3 woody species recorded along its entire length, and an average of five per 30 m section. Ivy and bramble grow thorough the hedge, and ground flora includes hogweed, nettle and cleavers. At its northern end this hedge connects to a woodland.

Hedgerow H3

Hedge H3 abuts several residential gardens, but appears to be located outside of their curtilage. The hedgerow management differs along its length where it abuts different gardens. Its northern third is overshadowed by a tall conifer hedge, and here the hedge is not trimmed at the top, and it reaches c. 4 m high; this section also has at least one large gap. The rest of the hedge is cut to roughly 2 m high by <1 m wide. The hedge supports a total of nine Schedule 3 woody species along its entire length; however, many of these species appear only rarely and it has an average of four woody species per 30 m. This tree has a single standard tree (an early-mature horse chestnut) and its ground flora is species-poor.

Hedgerow H4

This hedge has been recently trimmed to c. 1 m high by 1 m wide, and has a single standard pedunculate oak at its western end. The western portion of the hedge is located on an earth bank raised above the road level. The hedge supports a total of seven Schedule 3 woody species along its entire length; but hawthorn is the dominant species at either end, with the central section supporting a more diverse range species, resulting in a mean number of 4 species per 30 m. Bramble is abundant and almost smothers the hedge in places. Ground flora includes a polypody resembling *Polypodium cf. vulgare*, ivy, nettle and bracken. There are no significant gaps, excluding the single field access.

Hedgerow H5

This hedgerow is trimmed along the sides only, and reaches approximately 4 m tall. This hedgerow extends out of the site, although a large gap at its northern end severs it from the rest of the hedge along the western edge of this field. The hedge has numerous other gaps along its length, including one c. 10 m long. The hedge supports a total of eight Schedule 3 woody species along its entire length; however, the species are patchily distributed and it has a mean number of 3.7 species per 30 m section. The ground flora is similar to that of hedge H4.

3.4 Protected and Priority Species

Relevant protected and priority species records within 1 km of the site are given below. None of the records provided relate directly to the study site.

An absence of records does not mean that a species is not present, merely that it has not been recorded. Some species records are not obtainable from the sources utilised and there may be further undetected records for such species on the study site or in the local area.

3.4.1 Bats

SEWBrEC provided 48 records of at least five bat species within the 1 km search radius made between 1960 and 2012. SEWBrEC also provide a further 146 records of bats made between 1 km and 3 km of the site (made between 1974 and 2018), as bats are highly mobile, high priority species and should be taken into account in ecological assessment due to the possibility of their using land within the search area for part of their life cycle. Species included noctule *Nyctalus noctula*, common pipistrelle, soprano pipistrelle, brown long-eared bat *Plecotus auritus* and lesser horseshoe bat, as well as records of indeterminate bat species.

The nearest record is of a pipistrelle species roost, within 500 m of the site⁹, made in 1996. The next closest record relates to an aural recording of a commuting noctule, made in 2012 approximately 500 m south-west of the site.

The site supports no buildings and all the trees are in good condition and thus lack potential roosting features. The hedgerows on site provide suitable foraging and commuting habitat for bats, including an important link to the woodland located c. 70 m to the north of the site, which is considered to provide highly suitable foraging opportunities for bats. The majority of the site has limited foraging value for lesser horseshoe bats, although the hedgerows and stream will offer some limited opportunities.

3.4.2 Otter, water vole and white-clawed crayfish

SEWBrEC holds a single record of otter within 1 km of the site; this record was made on Mounton Brook, approximately 820 m north-east of the site in 2005, and a further five records made 1.2 km to 1.5 km distant, between 2002 and 2010.

SEWBrEC hold 11 records of white-clawed crayfish made between 1900 and 2010. The majority of these records were provided as four-figure grid references, so it was not possible to determine their exact distance from the site; however, a single record from 2010 was provided with a more exact grid reference, and it was possible to determine this record was made 970 m north of the site. All records supplied relate to Mounton Brook, which is approximately 600 m to the north-east at its closest point. SEWBrEC holds no records of water vole within the search area.

The small watercourse on site is short in length and lacks direct connectivity with other suitable habitat in the wider area such as Mounton Brook. As such, these species are considered unlikely to be present on site and they are not considered further within this report.

3.4.3 Dormouse

SEWBrEC holds no records of dormouse within 1 km of the site, although it holds over 150 records of dormouse within 1-2 km, made between 1959 and 2019, with the majority of records from a complex of woods located to the south and west of the site.

⁹ Record is considered sensitive under NRW Guidelines and thus exact location of record is not provided.

The hedgerows on site are relatively narrow (generally no wider than 1 m) and subject to relatively severe management, which means they are unlikely to provide suitable resting places for dormouse; however, they do support a relatively diverse range of species and thus will provide some potential foraging opportunities. Two of the hedges have direct connectivity to woodland approximately 70 m to the north, which may provide more suitable habitat for this species, although there are no dormouse records associated with this wood.

3.4.4 Badger

SEWBRc holds three records of badger made between 1968 and 2007 within the 1 km search area; The closest record was of a road casualty made in 2007 some 550 m north of the site. The arable and grassland habitats provide foraging opportunities for badger, and several dung pits were recorded around the edges of the large arable field, confirming the presence of this species within the local area. No badger setts were found on site; whilst the hedges may provide some sett building opportunities it is considered more likely that badgers would build setts within the nearby woods.

3.4.5 Birds

SEWBRc holds 57 records of eight protected and national priority bird species made within a 1 km radius, plus a further five records made 1-3 km from the site (which include a further three species). The closest records relate to several species recorded within the gardens of Shirenewton, approximately 100 m from the site (house sparrow *Passer domesticus*, dunnock *Prunella modularis*, starling *Sturnus vulgaris* and song thrush *Turdus philomelos*). Other species records provided were of goshawk *Accipiter gentilis*, corn bunting *Emberiza calandra*, kestrel *Falco tinnunculus*, tree sparrow *Passer montanus*, marsh tit *Poecile palustris*, bullfinch *Pyrrhula pyrrhula* and barn owl *Tyto alba*. SEWBRc also provided records of a further six species of conservation concern, including swift *Apus apus*, willow warbler *Phylloscopus trochilus* and whitethroat *Sylvia communis*.

The site may provide foraging and/or nesting opportunities for most of these species, although its use by the birds of prey is likely to be infrequent at most. The following birds were seen or heard on or near the site during the survey: blackbird *Turdus merula*, carrion crow *Corvus corone*, goldfinch *Carduelis carduelis*, long-tailed tit *Aegithalos caudatus*, pheasant *Phasianus colchicus*, robin *Erithacus rubecula* and yellowhammer. A flock of yellowhammer (approximately 20 birds) was seen foraging in the harvested oil-seed rape field; it is possible that other seed-eating species of farmland birds were also present in this group. Where the hedges abut areas of unmanaged habitat (e.g. parts of hedges H2 and H3), the site may offer nesting locations for this priority species.

3.4.6 Reptiles

SEWBRc holds no records of reptiles within the 1 km search radius, but provided two records of adder *Viper berus* made c. 1.8 km and 1.9 km from the site, with the closest record made in 2019.

The site has very limited suitability for reptiles, other than the hedgerows and small areas of unmanaged habitat at the peripheries, including dense scrub, poor semi-improved grassland and tall ruderal vegetation. Due to disturbance of the site and the wider fields by arable cultivation, the likelihood of reptiles being present is low.

3.4.7 Great crested newt

SEWBrEC holds two records of great crested newt within the 1 km search radius, dated 2011 and 2014. The most recent record was made approximately 320 m to the south. The second record, of a road casualty, is provided as a four-figure grid reference, so it was not possible to determine its exact distance from the site, although it also was made to the south of the site.

The majority of the site is of very limited suitability for great crested newt, other than the hedgerows and other peripheral habitats which offer some limited foraging/sheltering opportunities. Mapped data¹⁰ shows there is one pond within a 500 m radius of the site, located 190 m to the south. There is a further waterbody just outside of this search area, located c. 500 m to the south-east; the presence of unmapped garden ponds cannot be ruled out.

3.4.8 Other priority animals

Mammals

SEWBrEC holds four old records (pre-1970) of brown hare *Lepus europaeus* within a 1 km radius of the site, and a single record of weasel *Mustela nivalis* from 1995. The habitats on site and in the local area may provide suitable opportunities for a range of mammals.

Invertebrates

SEWBrEC holds records of two protected (swallowtail *Papilio machaon*) or national priority (red-shanked carder-bee *Bombus ruderarius*) species within the 1 km search radius, plus records of three further mobile species made between 1 and 2.2 km from the site. SEWBrEC excluded records of 13 moth and one butterfly species listed on Section 7 as “research only”. Records were also provided of two butterflies and four grasshopper species of local conservation concern. The site is dominated by species-poor habitats and is likely to provide foraging and refuge opportunities for common species only.

3.4.9 Protected/priority plants and fungi

SEWBrEC holds seven records for bluebell *Hyacinthoides non-scripta* (a protected species, listed against sale only), as well as historical records (pre-1950s) for two national priority orchid species within a 1 km radius of the site. SEWBrEC also holds further records of five species of national conservation concern and 53 records of 28 species of plants, mosses and lichens of local conservation concern. The majority of species are mostly associated with grassland, woodland and marshy habitats. SEWBrEC hold no records of fungi within the search radius.

No protected or priority species were recorded on site during the survey. The site is dominated by species-poor habitats, and of the species listed it only has potential to support bluebell within the hedges, and charlock *Sinapis arvensis* (listed as Vulnerable on the Wales Red List) in the arable field. Bluebell is a spring flower and would not be visible at the time of the survey; however, charlock is often visible all year round (Poland & Clement, 2020).

3.5 Invasive Alien (Non-Native) Species

SEWBrEC provided 19 records of six plant species listed on Schedule 9 of the Wildlife and Countryside Act (1981, as amended) and/or EU Regulation 1143/2014 within a 1 km radius, plus

¹⁰ <http://lle.gov.wales/>

four further records within 1-2km of the site, including records of three additional species. Records included three-cornered garlic *Allium triquetrum*, wall cotoneaster *Cotoneaster horizontalis*, Montbretia *Crocasmia x crocosmiiflora*, Canadian waterweed *Elodea canadensis*, Japanese knotweed *Reynoutria japonica*, New Zealand pigmyweed *Crassula helmsii*, Himalayan balsam *Impatiens glandulifera* and American skunk-cabbage *Lysichiton americanus*.

Further records of species considered to be invasive non-native animal and plant species, but without legal control, were also provided.

No invasive plant species with legal control were recorded on site during the survey; however, some cherry laurel (considered to be an invasive non-native species, but without any legal controls) was noted within hedge H3.

4 EVALUATION

4.1 *Historical Ecological Data and Assessments*

A previous survey of the field in which Candidate Site 0085 is located was completed in 2012 (BSG, 2012). This survey classified that site, known as ASN032, as being of 'Low' value. It is noted that there was no mention of the ancient woodland parcel which abuts a small part of the site's northern boundary within the 2012 report.

Seven planning applications submitted within the last five years were accompanied by ecological surveys. Of these, four comprised bat surveys to inform extensions to existing properties, with roosts identified for common and/or soprano pipistrelle species in three properties. The proposed LDP allocation sites support no potential roosting features, but may offer foraging opportunities for these species, and the boundary hedges may provide connectivity between the roosts and suitable foraging habitat in the wider area; as such any inappropriate developments with the two proposed sites may have indirect adverse impacts on these roosts.

The remaining three applications were:

- **DM/2018/02066 – Outline application for 11 dwellings on the eastern side of Shirenewton (c. 500 m distant):** these proposals will result in the loss of a significant amount of species-rich hedge (a Section 7 habitat) and comments from MCC's Biodiversity and Ecology Officer recommend minimising the loss and translocating any removed hedge to a boundary outside of private ownership, with long term management secured through a Green Infrastructure Management Plan. Further information regarding the presence of reptiles was requested by the Biodiversity Officer to inform the decision, and a Construction Environmental Management Plan and lighting strategy were requested.
- **DC/2015/00688 – Residential development of LDP allocation sites to provide five dwellings (c. 450 m distant):** Hedges are present and MCC's Biodiversity and Ecology Officer made comments to ensure these features will be retained, protected and appropriately managed (and not included within the boundaries of private gardens).
- **DC/2017/01122 – Erection of two detached dwellings (c. 400 m distant):** No notable habitats are present. No significant impacts are predicted and the MCC's Biodiversity and Ecology Officer recommended the inclusion of conditions to avoid impacts on bats and reptiles (if present).

With the implementation of appropriate avoidance, mitigation and compensation measures, it was determined that no impacts upon key ecological receptors would result from these planning applications. Any further development on the application sites has the potential to result in cumulative impacts to key ecological receptors in the locality, dependent on the nature of the proposals.

4.2 *Designated Sites and Ancient Woodlands*

The site has no designation for nature conservation, so no designated sites will be directly affected by the development.

Internationally and nationally designated sites

Wye Valley and Forest of Dean Bat Sites SAC/Mwyngloddfa Mynydd-Bach SSSI

Whilst the Candidate Sites are not within the Wye Valley and Forest of Dean Bat Sites SAC or a lesser horseshoe bat Juvenile Sustenance Zone (JSZ), it is within the Core Sustenance Zone (CSZ)¹¹ for bats using Mwyngloddfa Mynydd-Bach SSSI and a further part of the SAC (known as Itton Court Stud, which is also designated as part of the Wye Valley Lesser Horseshoe Bats SSSI) located approximately 1.8 km to the north-east. Whilst Mwyngloddfa Mynydd-Bach is primarily of importance for hibernating bats, with peak numbers likely to be present from September to April (inclusive), it is used by low number of bats throughout the year. Itton Court Stud supports at least 80 adult lesser horseshoe bats and is considered to be an important transitory roost utilised in spring and autumn. The Candidate Sites are also located within the 1.2 km mean maximum radius that lesser horseshoe bats forage from a hibernation roost in winter (Natural England and Natura 2000, 2019).

Habitat which surrounds a SAC contributes to maintaining its favourable conservation status. In this case, the loss of lesser horseshoe bat foraging habitat/connectivity in the wider area could adversely impact upon the Wye Valley and Forest of Dean Bat Sites SAC. The study site is dominated by arable land, which is considered to be a sub-optimal foraging habitat for lesser horseshoe bats. The primary foraging habitat for lesser horseshoe bats is broad-leaved woodland, where they often hunt high in the canopy; however, they will also forage along bushy hedgerows, tree-lines and well-wooded riverbanks (Schofield, 2008). Studies undertaken in the Wye valley in Monmouthshire revealed that lesser horseshoe bats spend the majority of their time foraging in woodland (Bontadina *et al.*, 2002). Lesser horseshoe bats will also forage over cattle-grazed pastures, such as Mynydd-Bach Meadows SINC located on the other side of Ditch Hill Lane. Of the hedgerows on site, H1 and H4 are both subject to frequent management and are cut to roughly 1 m tall, as is most of hedge H3, making them less suitable for use by foraging lesser horseshoe bats than the other taller/slightly less intensively managed hedges on site (H2 and H5). As well as foraging habitat, linear features are important for connecting habitats, although the site does not appear to be situated at a key location in between patches of good quality habitat.

Whilst the site is located within the foraging range of lesser horseshoe bats from a key hibernation site (Mwyngloddfa Mynydd-Bach SSSI), winter foraging generally occurs in damp woodlands with decaying wood and grazed pasture with lots of dung (Natural England and Natura 2000, 2019) so any use of the site for foraging is unlikely to be significant. Whilst the stream on site could be used by bats as a water source, which is important for hibernating bats, other water sources are present nearer to the hibernation roost.

Although it is not considered to support highly suitable habitat for lesser horseshoe bat, the use of the site by this species cannot be ruled out.

To ensure the requirements of the Habitats Regulations are met, further assessments and possibly surveys may be required, as detailed in Section 5.1.

Llwyn y Celyn Wetland SSSI

This SSSI is located c. 550 m north of the site. Although it is not clear where the small stream on

¹¹ The Core Sustenance Zone for lesser horseshoe bat is 2 km (Collins, 2016).

site goes after it disappears into a sink at the south-eastern corner of the site, it is likely that it drains into a stream to the south-east, which flows through Shirenewton Meadows before entering the Mounton Brook downstream of this SSSI. Whilst there is unlikely to be a direct hydrological link between the application site and this SSSI, the land beyond the northern end of the application site slopes steeply downwards to the north and towards this SSSI, and it is possible that unmitigated surface water runoff and foul water could impact upon the wetland SSSI. Measures should be implemented to ensure any proposed development does not adversely impact on this site.

Locally designated sites and ancient woodlands

Mynydd-Bach Meadows SINC is located c. 10 m from the application site, on the other side of Ditch Hill Lane. There will be no direct impact on the site, but is a possibility of indirect impacts from runoff and a possible increase in recreational pressure resulting from an increase in use of the public footpath that passes through the site. An increase in nocturnal illumination could also impact on how nocturnal fauna use this site.

The application sites are likely to be linked to Shirenewton Meadows SINC via the stream, so there is potential for some adverse impacts to occur via surface water runoff/foul water etc.

Due to the distance and lack of ecological connectivity between the site and the remaining SINC (all are located over 350 m away), no impacts on the other sites are predicted.

The nearest ancient woodland, known as Ross's Wood (AWI parcel Nos. 11660, 9085, 14888 and 50468), is located c. 90 m from the site. The development will not directly abut this woodland and there are no public rights of way through the woodland marked on Ordnance Survey maps. No direct impacts are predicted; however, the presence of new dwellings has the potential to indirectly impact upon this woodland. The land slopes downwards from the site towards the woodland and thus any development may impact upon the woodland's hydrology. Research has shown that the construction of developments close to ancient woodlands may also increase the likelihood of unmanaged public access, leading to trampling of vegetation, vandalism etc. Additionally, the construction of properties close to woodland increases the potential for predation of woodland fauna by pets or large birds, such as magpie *Pica pica*, attracted to the area by the resources available in gardens.

Recommendations for appropriate avoidance, mitigation and compensation are made in Section 5.1 to avoid impacts upon these non-statutory sites.

4.3 Habitats

The site contains five hedgerows, all of which qualify as a Section 7 Priority Habitat in Wales. Otherwise there are no priority habitats on the site, as the arable fields have little or no field margin and thus have limited biodiversity value.

None of the hedges are classed as Important under the *Hedgerow Regulations 1997* based on the current assessment. However, hedge H1 has an average of five species per 30 m and three confirmed associated features (a parallel hedge, a supporting bank and less than 10 % gaps) and it may qualify as Important if it supports enough woodland species; only one such species was

recorded during the survey, but most woodland species are generally not visible in the autumn so their presence cannot be ruled out. Further survey would be required to determine its value. It is noted that a survey of the hedgerows in October will not identify whether they are used by bird species of conservation concern as nesting locations; given that yellowhammers were seen on site during the survey it is possible that they could breed within some or all of the hedges, making them Important.

Despite this, two hedges (H1 and H2) are relatively species-rich and are considered to be of High value under the MCC guidelines, whilst the other hedges are species-poor and of Medium (H3 and H4) or Low value (H5).

There are no veteran or over-mature trees within the survey area; however, a few mature pedunculate oak trees are present. These trees are in good condition, but are considered to be of high ecological value as it is not possible to replace them, and because in time they will develop into over-mature/veteran trees with greater ecological value.

A small stream is present on site, and although it is a short, discontinuous section, it forms a link by which impacts on site can indirectly affect the wider environment.

Recommendations to retain and protect these notable habitats/features are provided in Section 5.2.

In general the site's other habitats are of very limited nature conservation value, being dominated by land in arable cultivation, plus small areas of unmanaged species-poor grassland, tall herbs and scrub. The loss of these habitats as a result of any development is unlikely to result in significant ecological impacts on the local area. Nevertheless, to ensure that the development results in a net benefit to biodiversity, in line with planning policy, landscaping should be designed sensitively to mitigate/compensate for any residual biodiversity loss.

4.4 Ecological Connectivity

The site's ecological connectivity is primarily linked to the boundary hedges and the small stream. Hedges H1 and H2 connect to a cluster of woodlands to the north, and may form an important link for fauna to move between these woodlands and the residential properties that abut the site to the south and east, for example bat species which roost within dwellings in Shirenewton. At the time of the survey the site hedges were quite heavily managed and this will reduce their suitability somewhat, but they are likely still to be used by animals for commuting/foraging and shelter (this is discussed further below). None of the hedges on site form direct links between different areas of semi-natural habitat/sites of nature conservation importance in the local area.

Within the context of the site, any improvement in connectivity would be most appropriate along the northern edge, where no linear features are currently present.

Measures are provided in Section 5 to avoid/mitigate any impacts of a proposed development on ecological connectivity, along with opportunities to strengthen and enhance connectivity.

4.5 Protected and Priority Species

4.5.1 Bats

The site is located approximately 640 m south-east and 1.8 km south-east of the two nearest parcels of the Wye Valley and Forest of Dean Bat Sites SAC. The site is not within the Juvenile Sustenance Zone for lesser horseshoe bats (and neither site is designated for its use as a maternity roost), but it is located within the Core Sustenance Zones for both of these roosts. This is further discussed in Section 4.2 and recommendations are made in Section 5.

The site's value to other bat species known to occur in the local area is limited to the boundary hedgerows and the stream. As such, any development that reduces the value of these linear features could have an impact on commuting/foraging bats. This could include removal of part or all of any hedges, flailing or heavy trimming, and illumination, and mitigation measures would be required accordingly.

No potential roosting features were identified during the survey and thus the development will not result in the loss of any such features.

4.5.2 Dormouse

The site's value to dormouse is limited to the boundary hedgerows. Records of this species in the wider area are all made over 1 km from the site, with the majority recorded within a complex of woods to the south. The site has no direct connectivity to these woodlands, being separated by the local road network, which will form at least a partial barrier to the dispersal of dormouse onto site. It is considered unlikely that dormice will use the site; however, it is not possible to completely rule out their presence, and precautionary mitigation measures would be required to prevent harm to individuals and comply with legislation.

4.5.3 Badger

The presence of badger latrines around the edge of the arable field suggests this field is located on the edge of a badger territory; arable land provides some foraging opportunities for badger (partly dependent on the cropping regime). The permanent grassland within the other field provides more suitable foraging opportunities, as does the nearby broad-leaved woodland habitat. Any development within these sites will result in the loss of badger foraging habitat, although these losses are considered to be negligible when compared to the amount of higher quality habitat that will remain available in the wider area.

The site also has suitability for sett building, although no setts were present at the time of the survey. However, badgers are mobile animals and can dig new setts at any time. Thus, there is the potential for impacts upon badgers as a result of any development and mitigation measures would be required accordingly.

4.5.4 Birds

The site will have some value to farmland birds and the hedges may support a variety of breeding species, including yellowhammer, a species observed foraging on site during the survey. Due to the apparently intensive nature of the farming regime on site, it is unlikely that the arable land will be a significant foraging area for birds. Depending on the cropping regime the large arable field may provide nesting habitat for a variety of species including reed bunting *Emberiza schoeniclus*

(which favour oil-seed rape as a nesting habitat) or ground nesting birds (e.g. cereal crops). The smaller field, used for silage, is considered to have limited suitability for foraging or nesting birds. The remaining habitats on site (hedges, trees, scrub and unmanaged grass/tall herb vegetation) may offer further nesting opportunities for birds, and the stream provides a potential water source.

Any impacts on suitable nesting habitat could have a corresponding impact on nesting birds and precautions will be required to comply with legislation. Impacts could include loss/removal of part or all of any features, inappropriate habitat management etc. Loss of arable habitat used by farmland birds cannot generally be mitigated for within a residential development, but large areas of arable land will remain the vicinity, so any impact is considered to be limited, and can be mitigated to a certain extent through retention of notable habitat features and appropriate compensatory planting. Mitigation measures would be required.

4.5.5 Reptiles

The site has very limited value for reptiles, and impacts on these species are relatively unlikely. However, occasional reptile presence, particularly by wide-ranging species such as grass snake, cannot be ruled out, and precautions would be required to prevent harm to individuals and comply with legislation.

4.5.6 Great crested newt

The site has very limited value for foraging great crested newt (being limited to the hedgerows and narrow field margins) and there is no suitable breeding habitat on site. There are a few ponds in the local area, with the nearest located 190 m to the south. The only known records of great crested newt have been made near to this pond and it is assumed that they breed there in the apparent absence of any other ponds in the local area. This pond is separated from the site by the local road network; whilst this road is unlikely to form a complete barrier to newt dispersal it will reduce the likelihood of individuals dispersing onto site for foraging if they breed within this pond. Overall, it is considered that any development of site is unlikely to impact on this species. However, the presence of individuals cannot be ruled out and precautions would be required to prevent harm to individuals and comply with legislation.

4.5.7 Other priority animals

Mammals

The site may provide habitat for priority mammals, including brown hare and weasel. However, the loss of habitat is considered to be negligible when compared to the amount of habitat that will remain available in the wider area. Precautions would be required to prevent harm to individuals.

Invertebrates

Several records of protected and priority invertebrates were provided; these species are predominantly associated with woodland, grassland or wetland habitats and as such the site is not considered to provide suitable habitat. The habitats on site are generally species-poor, and the more notable habitats (the hedgerows) are subject to insensitive management practices, which reduces their potential value for this species group. As such, no significant impacts upon invertebrates are anticipated, provided measures to protect the more notable habitats on and near site are implemented (see Section 5.2), and this species group is only considered further with regard to potential enhancement measures.

4.5.8 Protected/priority plants and fungi

No priority plants or fungi were recorded on site during the survey. Bluebells might be present in the hedgerows on site, but as bluebells are protected against sale only, breeches of legislation are unlikely to occur as the result of any proposed development.

Although the survey was undertaken at a sub-optimal time of year for botanical survey, the habitats present suggest the site is subject to intensive farming practices, which will significantly reduce the likelihood that it will support priority plants or fungi. As the site is unlikely to support priority species, and large areas of similar habitat will remain in the wider area, no recommendations are made for these species groups.

4.6 *Invasive Alien (Non-Native) Species*

The presence of cherry laurel, an invasive non-native species without any legal controls, in hedge H3 is of some note; however, this species was probably planted by the adjacent landowner and its removal may not be possible. Cherry laurel spreads by layering (which can be controlled through appropriate hedge maintenance), and through the spread of its seed by birds. Measures are suggested in Section 5.4. The survey was completed at a sub-optimal time of year and the presence of other invasive species (including those with legal controls) cannot be ruled out and precautionary mitigation measures would be required.

4.7 *SINC Evaluation*

The habitats on site are species-poor and do not meet the criteria for locally notable habitats or species-complexes required for a site to be designated as being of importance for local nature conservation.

4.8 *Overall Biodiversity Evaluation*

A summary of each of the Candidate Sites site evaluation is provided on separate Site Summary Forms, and the key points and assessment results are provided below.

Candidate Site CS0085

- The site is located within 250 m of two SINCs and an ancient woodland (AWI parcel numbers 9085 and 11660).
- Species that might utilise the site include bats, badger and yellowhammer.

Based upon MCC guidance this site is considered to be of **Medium** value.

Candidate Site CS0180

- The site is located within 250 m of two SINCs and an ancient woodland (AWI parcel numbers 9085 and 11660).
- Species that might utilise the site include bats, badger and yellowhammer.

Based upon MCC guidance this site is considered to be of **Medium** value.

5 RECOMMENDATIONS

The below mitigation, compensation and enhancement recommendations and the results of any further surveys should be used to develop a sensitive development scheme for these application sites, which could be informed by an Ecological Constraints and Opportunities Plan and full consideration of any cumulative impacts that might arise from other developments nearby. Any such design must ensure compliance with nature conservation legislation, avoid harm to key features and mitigate/compensate for any potentially significant ecological effects that could result from a development.

If these sites are taken forward as part of the LDP, an Ecological Impact Assessment (EclA) will need to be produced once the development design is finalised, based on the findings of any necessary further surveys and assessments. The EclA would include an assessment of the impact of the final proposals, and the proposed mitigation, compensation and enhancement measures to be implemented.

5.1 *Designated Sites and Ancient Woodlands*

5.1.1 Internationally/Nationally Designated Sites

Wye Valley and Forest of Dean Bat Sites SAC

The site is located within 2 km of two parcels of the Wye Valley and Forest of Dean Bat Sites SAC (Mwyngloddfa Mynydd-Bach and Itton Court Stud).

Should either site be allocated in the Local Plan, the competent authority (CA) will need to undertake a Habitats Regulations Assessment (HRA) screening assessment to determine whether the plan will have an effect on the conservation objectives of the nearby SAC, either alone or in combination with other plans or projects. It is the duty of the CA to undertake the HRA screening assessment. The CA in this case is MCC.

As a part of the HRA screening assessment, horseshoe bat foraging and/or commuting habitat within the Core Sustenance Zone of Wye Valley and Forest of Dean Bat Sites SAC should be considered.

Cumulative impacts arising from these sites and other developments in the local area cannot be ruled out and may need consideration within the HRA screening assessment.

Llwyn y Celyn Wetland SSSI

- Should the site be allocated in the Local Plan, consult with NRW on the likelihood of any proposed development adversely impacting upon this site (to include a consideration of any cumulative impacts with other nearby developments) and the requirement for any avoidance/mitigation/ compensation measures to prevent adverse impacts.
- It is likely that mitigation would include the implementation of standard measures to limit pollution and run-off during the construction¹² and operational phases.

¹² <https://www.gov.uk/guidance/pollution-prevention-for-businesses#construction-inspection-and-maintenance>

5.1.2 Locally designated sites and ancient woodlands

- **Mynydd-Bach Meadows SINC and Shirenewton Meadows SINC:** To avoid indirect impacts on these SINC's it would be necessary to design the development to avoid altering the hydrology of these sites and implement standard measures to limit pollution and run-off during the construction and operational phases. Any new lighting within the final development must be designed and sited so as to avoid intrusive light spill onto Mynydd-Bach Meadows (further detail is given in 5.3.1 below).
- **Ancient Woodland (Ross's Wood):** Any development should be designed to avoid altering the hydrology of this woodland. Measures to limit pollution and run-off, and intrusive light spill, as detailed above, would also protect the woodland if implemented in full.

5.2 Habitats and Connectivity

- A further survey should be undertaken of hedge H1 if it will be impacted by proposals to determine if it qualifies as Important under the Hedgerow Regulations 1997. The survey should be completed between April and early June, when Schedule 2 woodland herbs are most apparent.
- In line with the spirit of the MECA recommendations, any development should be designed to ensure that key connectivity features are retained/recreated to maintain existing links through the site and to the wider area.
 - Existing hedgerows should be retained as far as possible. If any partial removal is required, e.g. to create site access, the development must be designed to minimise this loss. It may be appropriate to translocate any hedges to be removed within the site, especially if high value hedges will be lost.
 - To strengthen existing habitat connectivity, hedges on site should be managed to improve structure and diversity, including the planting up of any gaps (using appropriate locally native species), the addition of hedgerow trees, and a reduction in the frequency/severity of management to create taller and bushier hedges. Connections to hedges in adjacent fields must be retained.
 - Any developments should be designed so hedges abut public open space, rather than private gardens, so that their long-term retention and appropriate management can be guaranteed
- All mature trees (including hedgerow trees) should be retained and protected as a part of any development.
- Measures would be required to protect retained trees and hedgerows including all root plates and canopies, from constructional activities, including vehicle movements, in line with British Standard *BS5837:2012 Trees in relation to design, demolition and construction*. Protective measures must be installed prior to works commencing.
- The stream corridor should be retained and protected to avoid impacts on the habitat both on site and downstream. Mitigation measures would need to be implemented to avoid

impacts during both the construction and operational phases. See recommendations for avoiding impacts to designated sites in Section 5.1 for more details.

- Any new lighting within the final development should be designed and sited so as not to impact on hedgerows or watercourse (further detail is given in 5.3.1 below).
- To mitigate for habitat loss, the soft landscaping should be designed to incorporate native planting and wildlife-friendly species. Planting should aim to provide a continuous sequence of flowers suitable for pollinators from March until October¹³,¹⁴, as well as fruit- and nut-bearing trees and shrubs to provide foraging opportunities for birds and mammals. Planting should also aim to replace any trees that cannot be retained.

5.3 Protected and Priority Species

5.3.1 Bats

Surveys and Habitats

Measures in Section 5.1 (regarding the nearby Wye Valley and Forest of Dean Bat Sites SAC) and Section 5.2 (regarding the retention and the protection of the boundary vegetation), if fully implemented, would also avoid adverse impacts occurring on lesser horseshoe bat foraging and commuting habitat. Such measures would also avoid impacts upon other bat species that occur within the area.

- Depending on the proposed site design, it may be necessary to complete bat activity surveys to determine how other bat species use the sites and thus how they will be impacted by the proposals, for example if the proposals will result in loss or severance of connectivity. These surveys should be undertaken in accordance with standard guidelines in Collins, 2016.

Lighting

Recommendations are made below regarding illumination of the site during construction and operational phases:

- To avoid impacts during site clearance and construction works, there should be no nocturnal illumination of the site during these phases of the project.
- A “lighting design strategy” should be completed for any development on site. This strategy should: identify those areas/features/species that are particularly sensitive; show how and where external lighting will be installed (through the provision of appropriate lighting contour plans and technical specifications of lighting fixtures/fittings) so that it can be clearly demonstrated that lighting will not adversely impact upon these areas/features/species; and demonstrate through the provision of appropriate lighting contour plans and technical specification that areas important for biodiversity will not be adversely illuminated by internal light spill from dwellings.

¹³ <https://www.rhs.org.uk/science/pdf/conservation-and-biodiversity/wildlife/rhs-perfect-for-pollinators-garden-plants>

¹⁴ <https://www.bumblebeeconservation.org/gardeningadvice/>

Further information can be found in 'Bats and artificial lighting in the UK; Guidance Note 08/18' (Miles *et al.*, 2018). This will also reduce impacts on other nocturnal fauna.

5.3.2 Dormouse

- Recommendations for hedgerow management (Section 5.2) and for bats (Section 5.3.1) would also avoid harm to dormouse. New planting on site should include a range of species that provide a year-round food source for this species, including hazel, oaks, hawthorn and honeysuckle.
- If at any point during these activities, or at any other stage during works, a dormouse is discovered, all work should stop, and a suitably licensed ecologist must be consulted. Telephone numbers of such should be held on site.

5.3.3 Badger

- Prior to development, a pre-construction site inspection should be carried out by a suitably qualified ecologist to check for badger setts.
- Badger access across the site should not be blocked during or post-construction.
- Any excavations undertaken during construction, including deep trenches or holes that are left overnight, should be fitted with suitable ramps at either end to allow badgers, and other mammals that might be able to access the site, a means of escape. Open pipework greater than 150 mm in diameter should be blocked off at the end of each day to ensure that badgers do not enter, or become trapped, within newly installed pipework. This would also prevent harm to other species, such as brown hare.
- If during any stage of works a badger sett is discovered, all work should stop immediately, and the advice of a suitably qualified ecologist should be sought. Telephone numbers of such should be held on site.

5.3.4 Birds

Measures outlined in Section 5.2 regarding the retention and the protection of the hedges and trees, if fully implemented, would help mitigate impacts on birds as a result of habitat loss and would ensure some nesting habitat is retained on site.

As all nesting birds are protected by law, the following measures should be implemented to ensure compliance with legislation:

- To avoid committing an offence, any nesting habitat (including arable) should be undertaken outside the bird breeding season (March to August inclusive). All cut material (e.g. branches, brash) should be removed from the site to prevent it from being used as nesting sites, or relocated to an area which will be left undisturbed during the breeding season.
- If this is not possible, the feature to be cleared should be checked immediately prior to works commencing by a suitably qualified ecologist. If there are breeding birds present, works cannot continue until the chicks have fledged and left the nest.

5.3.5 Great crested newt and reptiles

- Prior to development, the site should be maintained in a cultivated condition so that it does not become suitable for great crested newt or reptiles.

- Cut down tall vegetation (including scrub, tall herbs and long grass) using a staged cutting approach.
- Cut vegetation in a directional manner, to encourage any animals present to move into either retained habitat on site or adjacent areas outwith the development.
- No construction work should be undertaken at night.
- If at any point during these activities, or at any other stage during works, a great crested newt or reptile is discovered, all work should stop, and a suitably licensed ecologist should be consulted. Telephone numbers of such should be held on site.

5.3.6 Other priority animals

Measures outlined above would also ensure that harm does not occur to priority species that might occur on site. The following measures specific to these species are recommended to avoid harm during construction:

- If a brown hare leveret is discovered during the works it should be moved to a place of safety nearby.

5.4 Invasive Alien (Non-Native) Species

As the survey was completed at a sub-optimal time of year, the presence of other invasive species cannot be ruled out and the following precautionary measure is recommended:

- If at any point, any legally controlled species (such as Japanese knotweed) is discovered, all work should stop and a suitably qualified ecologist should be consulted.

Although not legally controlled, the presence of other non-native species is a consideration to any development and the following recommendation is provided:

- If possible, remove the cherry laurel from boundary hedgerow H3. It can be removed by digging up the entire plant, including all roots, or by the removal of above ground growth and subsequent stump treatment to prevent regrowth¹⁵.

5.5 Summary of Further Surveys

A summary of further surveys required to inform a detailed ecological impact assessment sufficient to inform a planning application is provided in Table 5.1. Pre-works surveys are also included within this table for reference. These surveys are further detailed within the sections above.

¹⁵ Best Practice Management Guidelines: Rhododendron (*Rhododendron ponticum*) and Cherry Laurel (*Prunus laurocerasus*) <http://www.nonnativespecies.org/downloadDocument.cfm?id=1018>

Table 5.1: Summary of Further Surveys

Ecological Receptor	Survey required	Timing of survey
Surveys to completed prior to submission of planning application		
Bats	Survey to determine how lesser horseshoe bats utilise the habitats on site may be required depending on results of the HRA screening assessment.	Dependent on outcome of HRA screening assessment
	Activity surveys to determine how other bat species utilise the habitats on site may be required depending on extent of any proposals.	April to October
Hedge H1	Hedgerow Regulations assessment to determine importance of hedge, if it will be impacted by the development	April to early June
Pre-works surveys		
Badger	Pre-inspection survey to check for badger setts.	Any time
Nesting birds	Pre-inspection check if vegetation to be removed during breeding season.	March to August

5.6 Summary of Avoidance, Mitigation and Compensation Measures

A summary of avoidance, mitigation and compensation measures required (or potentially required, depending on results of the further survey) is provided in Table 5.2; these measures are further detailed within the sections above.

These measures could be detailed in full within a Construction Environmental Management Plan (CEMP), Landscape and Ecology Management Plan (LEMP), Ecological Mitigation and Enhancement Plan (EMEP) or similar.

Table 5.2: Summary of Avoidance, Mitigation and Compensation Measures

Feature	Avoidance, Mitigation and Compensation Measures
Forest of Dean Bat Sites SAC	Should the site be allocated in the Local Plan, the competent authority will need to undertake HRA screening. This screening, and any necessary subsequent assessments, will determine/identify any appropriate measures
Llwyn y Celyn Wetland SSSI	Should the site be allocated in the Local Plan, consult with NRW regarding the potential for any impacts and the requirements for appropriate measures.
Mynydd-Bach Meadows and Shirenewton Meadows SINC	- Implement standard measures to limit pollution and run-off during the construction and operational phases, to include protecting the stream on site. - Design lighting to prevent intrusive light spill onto the adjacent Mynydd-Bach Meadows.
Ancient Woodland (Ross's Wood)	- Implement sensitive site clearance and construction methods to avoid impacts occurring during these phases. - Design development to avoid altering woodland's hydrology, prevent pollution incidents and run-off, and avoid intrusive light spill.
Hedgerows and streams: Connectivity	- Retain, protect and enhance the watercourse on site. - Retain all hedgerows and minimise any unavoidable losses. All boundaries should be brought into improved management and additional planting carried

Feature	Avoidance, Mitigation and Compensation Measures
	out to improve structure and diversity. If some hedge removal is necessary, mitigation/compensation measures will be required.
Hedgerows and Trees: Protection	All retained hedgerows and trees must be protected in accordance with British Standard BS 5837:2012: Trees in relation to design, demolition and construction. Recommendations.
Stream: Protection	Measures to avoid impacts on designated sites in the wider area detailed above include the requirement for protection of this feature.
Soft landscaping	Incorporate native planting and wildlife-friendly planting into the development to ensure the development produces a net benefit for biodiversity.
Bats	- Develop a lighting design strategy for a development, to ensure it does not impact upon ecological receptors that are sensitive to lighting, including bats and other nocturnal fauna, designated sites and notable habitats. - To avoid impacts during site clearance and construction works, there should be no nocturnal illumination of the site during these phases of the project.
Dormouse	- Recommendations to protect the hedges and bats would also apply to dormouse. - If at any time a dormouse is discovered, all work should stop and an ecologist should be consulted.
Badger	- Recommendations to protect the hedges and bats would also apply to badger. - Pre-construction site check required to ensure no setts have been dug. - Badger access across site should not be blocked. - Precautionary measures should be installed during construction period (cover holes/pipework at night or install ramps). - If a badger sett is discovered, stop work and consult ecologist.
Nesting birds	Remove nesting habitat outside of nesting season. If this is not possible, potential nesting habitat should be checked immediately prior to works commencing by a suitably qualified ecologist. If nesting birds are found, works cannot continue until the chicks fledge and leave the nest.
Amphibians, reptiles and brown hare	- Implement sensitive working measures during site clearance and construction. - No construction to be carried out at night. - If at any time a great crested newt or reptile is discovered, all work should stop and an ecologist should be consulted. - If a brown hare leveret is discovered it should be moved to a place of safety nearby.
Invasive plants	- If at any point, any legally controlled species is discovered, all work should stop and a suitably qualified ecologist should be consulted. - Remove cherry laurel from site boundary if possible.

5.7 Ecological Enhancement

Current planning policy requires that development projects minimise ecological damage and should contain elements of ecological enhancement. Planning Policy Wales (2018) requires that developments provide a net benefit for biodiversity. A variety of habitat creation options could be implemented at the site, such as:

- **Connectivity:** In line with MECA recommendations
 - Additional hedgerow/tree belt planting using appropriate native species should be carried out along the northern boundary, where there is currently no hedgerow, to

- strengthen and enhance connectivity through the site and the wider landscape, and would be beneficial to bats and other fauna (including many species of birds).
- There are opportunities to improve habitat links within the site, including from the significant areas of woodland to the north, through strengthening of habitat links, e.g. through planting of native hedgerow trees (such a pedunculate oak and field maple) and sensitive hedge management to create tall, bushy hedgerows at least 3 m wide and 3 m tall.
 - All boundaries on site should be designed to ensure that small terrestrial fauna, such as hedgehogs, are able to freely move between potential foraging habitat within the development area and the surrounding habitats; holes within boundaries at ground level and measuring 13 cm by 13 cm are sufficient to allow hedgehogs to pass through¹⁶.
- **Habitat creation**
 - Design the site's sustainable drainage system to provide opportunities for wildlife in line with best practice guidelines¹⁷. Well-designed features can create multi-functional features which offer more than just biodiversity benefits within a development.
 - **Opportunities for fauna:**
 - Incorporate roosting features for bats (e.g. pipistrelle species) and nesting opportunities for birds (including house sparrow, starling and swift) into new dwellings using integrated boxes.
 - Incorporate insect boxes into the development; a variety of designs are available for solitary bees, ladybirds, lacewings, wasps and many other species.
 - Create habitat piles on site close to the retained boundary features. These features can be created in various ways to benefit a variety of species and species groups, including amphibians, reptiles, hedgehog and invertebrates.

5.8 *Validity of Report*

The results of this assessment are valid for a maximum of two years from the date the site visit was carried out (October 2019). Should the subsequent works be delayed beyond this date, the survey should be updated; it should also be noted that local planning authorities may require updated surveys within a shorter timescale than two years.

¹⁶ <https://www.hedgehogstreet.org/help-hedgehogs/link-your-garden>

¹⁷ <https://www.wwtconsulting.co.uk/wp-content/uploads/2013/06/WWT-RSPB-guidance-SuDS-report-final-lowres.pdf>

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APPENDIX 1 – LEGISLATION AND PLANNING POLICY

A1.1 Introduction

This section briefly lists legal protection/planning policy applying to designated sites, species or habitats mentioned in this report. It does not comprehensively reflect the text of the legislation/policy and it should not be relied upon in place of it. The following documents are relevant:

- The Wildlife and Countryside Act 1981 (as amended);
- The Environmental Protection Act 1990;
- The Countryside and Rights of Way (CROW) Act 2000 (in England and Wales);
- The Natural Environment and Rural Communities (NERC) Act 2006;
- Conservation of Habitats and Species Regulations 2017 (which implements the Habitats Directive 92/43/EEC and parts of the Birds Directive 2009/147/EC in the United Kingdom)
- EU Regulation 1143/2014 on Invasive Alien Species;
- Technical Advice Note (TAN) 5: Nature Conservation and Planning (2009);
- The Nature Recovery Plan for Wales Setting the course for 2020 and beyond (2015);
- Environment (Wales) Act (2016);
- Well-being of Future Generations (Wales) Act (2017);
- Planning Policy Wales (2018); and
- Monmouthshire County Council Local Development Plan 2011-2021 (Adopted 2014).

A1.2 Habitats of Principal Importance

Habitats designated as being “*of principal importance for the purpose of maintaining and enhancing biodiversity*” as listed under Section 7 of the Environment (Wales) Act 2016 form a key component of the biodiversity strategy for Wales. They are material considerations in the planning process.

A1.3 Hedgerow Regulations 1997

Under the *Hedgerows Regulations 1997* it is against the law to remove or destroy Important hedgerows without permission from the local planning authority. Various criteria specified in the *Regulations* are used to identify Important hedgerows for wildlife, landscape or historical reasons. The local planning authority is also the enforcement body for offences created by the *Regulations*.

The *Hedgerow Regulations 1997* (51 No. 1160) were made under Section 97 of the Environment Act 1995. They introduced new arrangements for local planning authorities in England and Wales to protect important hedgerows in the countryside, by controlling their removal through a system of notification.

Under the *Hedgerow Regulations 1997*:

- It is against the law to remove most countryside hedgerows which lie within or adjacent to common land, protected land, agricultural land, forestry or the breeding or keeping of horses, ponies or donkeys without permission;

- Most proposals to remove a hedgerow require advance notification of the local planning authority through use of a hedgerow removal notice form, available from the local planning authority;
- The local planning authority have 42 calendar days to make a decision as to whether to approve or deny consent for hedgerow removal. This decision will be based on an assessment as to whether the hedgerow is Important or not, under the methodology outlined within the Regulations;
- If no decision is forthcoming after 42 calendar days, removal can proceed without consent;
- If a hedgerow is removed without permission within the 42 calendar day period, an unlimited fine is possible and it is also possible that the hedgerow will need to be replaced.

Exceptions to the legislation, where consent from the local planning authority for removal is not required, include the following:

- Hedgerows that are less than 20 m in length and which do not connect at each end to other hedgerows;
- Hedgerows that lie within or form the boundary of a dwelling house; and
- Hedgerows that are less than 30 years old.

A1.4 Protected Species

A1.4.1 Dormouse, great crested newt, otter, and all species of British bat

The dormouse *Muscardinus avellanarius*, great crested newt *Triturus cristatus*, otter *Lutra lutra*, and all species of British bat (*Vespertilionidae* and *Rhinolophidae*) are listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), and receive some limited protection under Section 9. These species are also all listed as European Protected Species in Schedule 2 of The Conservation of Habitats and Species Regulations 2017 (which implements the EC Directive 92/43/EEC in the United Kingdom) which gives them full protection under Regulation 43.

It is also an offence to set and use articles capable of catching, injuring or killing such species (for example a trap or poison), or knowingly cause or permit such an action.

The dormouse, great crested newt, otter and eight species of British bat are listed as species of principal importance for the purpose of maintaining and enhancing biodiversity in Wales under Section 7 of the Environment (Wales) Act 2016.

A1.4.2 White-clawed crayfish

The white-clawed crayfish *Austropotamobius pallipes* is listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), and receives protection under Section 9 parts 1, from killing, taking or injury, and Part 5, which prevents their sale. They are also listed under Annexes II and V of the EC Habitats Directive, implemented in the UK by The Conservation of Habitats and Species Regulations 2017 (as amended); Annex II listing requires that Special Areas of Conservation (SACs) are established specifically to conserve the species.

The white-clawed crayfish is listed as a species of principal importance for the purpose of maintaining and enhancing biodiversity in Wales under Section 7 of the Environment (Wales) Act 2016.

A1.4.3 Water vole

Water vole *Arvicola amphibius* is listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), and receives full protection under Section 9. Water vole is listed as a species of principal importance for the purpose of maintaining and enhancing biodiversity in Wales under Section 7 of the Environment (Wales) Act 2016.

A1.4.4 Common reptiles

Common lizard *Zootoca vivipara*, grass snake *Natrix helvetica*, slow worm *Anguis fragilis*, and adder *Vipera berus* are listed under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), in respect of Section 9(5) and part of Section 9(1). These species are included as species of principal importance for the purpose of maintaining and enhancing biodiversity in Wales under Section 7 of the Environment (Wales) Act 2016.

A1.4.5 Birds

All species of bird are protected under Section 1 (1) of the Wildlife and Countryside Act 1981 (as amended). Certain species are listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) and receive protection under Section 1(5). There are special penalties where offences are committed for any Schedule 1 species.

Section 7 of the Environment (Wales) Act 2016 includes 51 bird species which are of principal importance for the purpose of maintaining and enhancing biodiversity in Wales.

A1.4.6 Badger

The badger *Meles meles* is protected in Britain under the Protection of Badgers Act 1992. The legislation protects badgers and their setts. The badger is also protected under Schedule 6 of the Wildlife and Countryside Act 1981 (as amended) relating specifically to trapping and direct pursuit.

A1.5 Priority Species

Various species (including vertebrates, invertebrates, plants, lichens, bryophytes, fungi and stoneworts) potentially present in the area are listed as species of principal importance for the purpose of maintaining and enhancing biodiversity in Wales under Section 7 of the Environment (Wales) Act 2016. They are a material consideration in the planning process.

A1.6 Invasive Alien (Non-Native) Species

Several invasive, non-native animal and plant species are listed on Schedule 9, Parts I and II respectively, of the Wildlife and Countryside Act 1981 (as amended). Schedule 14 (1 and 2) makes it illegal to release or allow to escape (animals) into the wild, or to plant or cause to grow (plants) in the wild, any animal or plant species listed on schedule 9 (parts 1 and 2).

EU Regulation (1143/2014) on invasive alien (non-native) species imposes restrictions on several animal and plant species known as 'species of Union concern', whose potential adverse effects across the European Union are such that concerted action across Europe is required. Strict restrictions (subject to certain exemptions) mean that these species cannot be imported, kept, bred, sold, used or exchanged, allowed to reproduce, grown or cultivated, or released into the

environment. The Invasive Alien Species (Enforcement and Permitting) Order 2019 provides enforcement provisions, prescribes offences and penalties to comply with the requirements of the EU Regulation.

APPENDIX 2 – DESIGNATED SITES AND ANCIENT WOODLANDS

Designated Sites

Table A2.1: Designated sites within 1 km of study site.

Name	Description/Distance from site	Status
<i>Statutory Designations</i>		
Wye Valley	No further information provided. <i>140 m north</i>	AONB
Llwyn y Celyn Wetland	Supports calcareous spring mire and swamp plant communities (10.4 ha). <i>550 m north</i>	SSSI
Wye Valley and Forest of Dean Bat Sites	A complex of sites on the border of Wales and England which forms the greatest concentration of lesser horseshoe bats in the UK, as well as large number of greater horseshoe bats, and supports exceptional breeding populations of both. Many of the sites are maternity roosts but it also includes several disused mines used as hibernation roosts. This SAC is designated for the presence of these Annex II species. The site closest to the study site (Mwyngloddfa Mynydd-Bach) is also designated as a SSSI and further details regarding Mwyngloddfa Mynydd-Bach are provided below. <i>640 m north-east</i>	SAC
Mwyngloddfa Mynydd-Bach	A disused mine adit used as a hibernaculum by lesser horseshoe bats, but also throughout the year by smaller numbers of adult and immature lesser horseshoe bats. <i>640 m north-east</i>	SSSI
<i>Non-statutory Designations</i>		
Mynydd-Bach Meadows	One large field (2.79 ha) of species-rich neutral grassland, dominated by MG5 sub-communities, with a small area of rank MG1 grassland and small stands of scrub. Cattle grazed. <i>10 m north-east</i>	SINC
Shirenewton Meadows	A complex of fields which support a range of neutral (MG5 and MG6 communities) and marshy grasslands (M23 and M25 communities), with smaller areas of dry acidic grassland (U4 community) and scrub. The site has boundary hedgerows with many mature trees. 8.66 ha. Currently has limited management due to multiple owners and lack of stockproof fencing. <i>80 m east</i>	SINC
Batwell Meadows	Three fields of species-rich neutral grassland, dominated by MG5 community, with some poorer areas of MG6 (3.15 ha). Managed by hay cutting and winter grazing <i>350 m north-west</i>	SINC
Land off Usk Road/Wayside	A field with species-rich neutral grassland and tall hedgerows with mature trees (0.75 ha). Areas of scrub and tall herb are present by the hedgerows. The site supports some veteran trees. This site is close to several SSSI and SINC grasslands and is important for ecological connectivity. <i>470 m north-east</i>	SINC

Name	Description/Distance from site	Status
Batwell Marshy Grassland	The site (0.74 ha) is dominated by marshy grassland (M23 community), with smaller areas of drier MG5 and MG6 neutral communities. Scrub is encroaching into the site. It is bordered by overgrown hedges, plus sections of overgrown scrub and fencing. <i>640 m north-west</i>	SINC
Longmead Wood*	Woodland site. No further information provided. <i>720 m south</i>	SINC
Argoed Wood	An area of linear broad-leaved woodland (2.18 ha) with ash <i>Fraxinus excelsior</i> and pedunculate oak <i>Quercus robur</i> the dominant canopy species and hazel <i>Corylus avellana</i> understorey. The site has a rich ground flora, including several ancient woodland indicator species. The site has several veteran trees. <i>760 m west</i>	SINC, ASNW
Stoneycroft Wood*	Woodland site. No further information provided. <i>770 m south-west</i>	SINC, ASNW
Dinham Valley Woods*	Woodland site. No further information provided. <i>850 m south-east</i>	SINC, RAW, ASNW
Key SSSI: Site of Special Scientific Interest ASNW: Ancient Semi-Natural Woodland *Please note that SEWBRc currently do not hold any SINC summary information for all SINC that are also ASNW/RAWS.		
SAC: Special Area of Conservation SINC: Site of Importance for Nature Conservation RAWS: Restored Ancient Woodland		

Ancient Woodland Inventory

Table A2.2: Ancient Woodland parcels within 500 m of study site.

AWI Unique ID	Area (ha)	Woodland Category	Distance from site (m)
11660	0.86	Ancient Semi Natural Woodland	<i>90 m north</i>
9085	2.39	Ancient Semi Natural Woodland	<i>175 m north-west</i>
39872	7.34	Plantation on Ancient Woodland Site	<i>340 m north</i>
14888	0.17	Ancient Semi Natural Woodland	<i>350 m north</i>
50468	0.12	Ancient Woodland Site of Unknown Category	<i>360 m north</i>
41300	0.12	Plantation on Ancient Woodland Site	<i>380 m north</i>
14889	0.21	Ancient Semi Natural Woodland	<i>450 m north-west</i>
9086	3.52	Ancient Semi Natural Woodland	<i>470 m north</i>
14890	0.5	Ancient Semi Natural Woodland	<i>470 m north</i>
41524	0.97	Plantation on Ancient Woodland Site	<i>500 m north</i>

APPENDIX 3 – HEDGEROW SURVEY FORMS

Hedgerow 1

a) Hedge Number	H1		
b) Length & no. surveyed 30 m sections	186 m / 2 sections surveyed		
c) Surveyor and date	AD, 08/10/19		
d) Estimated height (H) and width (W)	H: 1 m / W: 1 m (growing up to 4 m H outside of site)		
e) Status	Not important†		

c) Schedule 3 Woody Species	Whole	30 m stretches	
	hedge	1	2
<i>Crataegus monogyna</i>	Y	Y	Y
<i>Fraxinus excelsior</i>	Y	Y	
<i>Ilex aquifolium</i>	Y		Y
<i>Corylus avellana</i>	Y		Y
<i>Rosa</i> spp.	Y	Y	Y
<i>Prunus spinosa</i>	Y		Y
<i>Quercus robur</i>	Y	Y	
Totals for Schedule 3 species	7	5	5

d) Other Woody Species			
Totals for other woody species	0	0	0

e) Features	Presence	Comments
Supporting bank or wall	Y	
Less than 10% gaps	Y	8 m gap for field gate and adjacent short section of fencing
Standard trees	-	Only 2 standard <i>Quercus robur</i>
Ditch for > 50% of length	-	
Parallel hedge within 15 m	Y	
Four or more connection points	-	
Three or more Schedule 2 species	-	Only one species recorded: <i>Mercurialis perennis</i>

f) Synopsis	
Mean number species per 30 m stretch	5
Number of features	2
Special qualifying species	-
Threshold altering factors	-

g) General Description

† As the hedge has been flailed prior to the survey, it is possible that the recent cut may obscured the presence of additional woody species. A single Schedule 2 species (dog's mercury) was recorded at the base of hedge; it is possible that other such species are present, but are not visible above ground in autumn. Given these constraints, it is possible that this survey may undervalue the importance of this hedge.

Recently cut roadside hedgerow, with a relatively diverse mixture of woody species – there is a parallel hedge on the other side of Ditch Hill Lane. Two standard mature pedunculate oaks are present within the hedgerow; only one is within the survey area. The hedgerow extends out of the site and joins to Ross's Wood (semi-natural ancient woodland) at its northern end. At its very northern end, in between the wood and the mature pedunculate oak, the hedge is only cut on the sides and it reaches a height of c. 4 m.

Ivy, bramble, black bryony and honeysuckle grow through the hedge, and the field layer includes dog's mercury, hogweed, hedge bedstraw, nettle and bracken (abundant in parts). The hedgerow appears to have been laid in the past, but not for many years.

Hedgerow 2

a) Hedge Number	H2
b) Length & no. surveyed 30 m sections	170 m / 2 sections surveyed
c) Surveyor and date	AD, 08/10/19
d) Estimated height (H) and width (W)	H: 4 m / W: < 1 m
e) Status	Not important

c) Schedule 3 Woody Species	Whole hedge	30 m stretches	
		1	2
<i>Crataegus monogyna</i>	Y	Y	Y
<i>Fraxinus excelsior</i>	Y		
<i>Ilex aquifolium</i>	Y		Y
<i>Corylus avellana</i>	Y	Y	Y
<i>Rosa</i> sp.	Y		Y
<i>Sambucus nigra</i>	Y	Y	Y
<i>Ligustrum vulgare</i>	Y		Y
<i>Cornus sanguinea</i>	Y		Y
Totals for Schedule 3 species	8	3	7

d) Other Woody Species			
<i>Malus domestica</i>	Y		1
Totals for other woody species	1	0	1

e) Features	Presence	Comments
Supporting bank or wall	-	
Less than 10% gaps	Y	A few small gaps developing plus small gaps for a field gate (3 m) and a stile (1 m).
Standard trees	-	Only 3 standard <i>Fraxinus excelsior</i>
Ditch for > 50% of length	-	
Parallel hedge within 15 m	-	
Four or more connection points	-	
Three or more Schedule 2 species	-	

f) Synopsis	
Mean number species per 30 m stretch	5
Number of features	1
Special qualifying species	-
Threshold altering factors	-

g) General Description
 Field hedgerow with a relatively diverse mixture of woody species and a few early-mature (multi-stemmed) ash. The hedgerow extends out of the site and joins Ross's Wood, which supports some semi-natural ancient woodland, although the area of woodland at the northern end of this hedge is not designated as ancient wood. The hedge is currently managed by trimming the sides only, and is developing some small gaps as a result. There is evidence of historic laying. Ivy and bramble grow through the hedge, and the field layer includes nettle, bracken and cow parsley (abundant in parts).

Hedgerow 3

a) Hedge Number	H3
b) Length & no. surveyed 30 m sections	177 m / 2 sections surveyed
c) Surveyor and date	AD, 08/10/19
d) Estimated height (H) and width (W)	H: 2-4 m / W: < 1 m
e) Status	Not important

c) Schedule 3 Woody Species	Whole hedge	30 m stretches	
		1	2
<i>Crataegus monogyna</i>	Y	Y	Y
<i>Quercus robur</i>	Y	Y	
<i>Ilex aquifolium</i>	Y	Y	Y
<i>Corylus avellana</i>	Y		Y
<i>Rosa</i> spp.	Y	Y	
<i>Sambucus nigra</i>	Y		
<i>Prunus spinosa</i>	Y		
<i>Carpinus betulus</i>	Y		Y
<i>Taxus baccata</i>	Y		
Totals for Schedule 3 species	9	4	4

d) Other Woody Species			
<i>Prunus laurocerasus</i>	Y		
<i>Aesculus hippocastanum</i>	Y		
Totals for other woody species	2	0	0

e) Features	Presence	Comments
Supporting bank or wall	-	
Less than 10% gaps	Y	One 5 m gap towards northern end.
Standard trees	-	One early-mature <i>Aesculus hippocastanum</i>
Ditch for > 50% of length	-	
Parallel hedge within 15 m	-	
Four or more connection points	-	
Three or more Schedule 2 species	-	

f) Synopsis	
Mean number species per 30 m stretch	4
Number of features	1
Special qualifying species	-
Threshold altering factors	-

g) General Description

Field hedgerow, with a relatively diverse mixture of woody species, which towards the northern end is overshadowed by a conifer hedgerow within the adjacent garden. At the southern end there is cherry laurel within the hedge and a single early mature horse chestnut (both non-native species); it is possible these were planted by the adjacent householder. The northern third of the hedge is subject to management on the field side only, but the rest, which abuts different residential gardens, appears to be subject to frequent cuts to 2 m high by <1 m wide. Ivy, bramble and black bryony grow through the hedge, and the field layer includes ivy, nettle and cleavers. At the very northern end of the hedge, a small stream emerges and flows parallel to the hedge for approximately 20 m and then flows eastwards along the southern edge of the adjacent field.

Hedgerow 4

a) Hedge Number	H4
b) Length & no. surveyed 30 m sections	216 m / 3 sections surveyed
c) Surveyor and date	AD, 08/10/19
d) Estimated height (H) and width (W)	H: 1 m / W: < 1 m
e) Status	Not important

c) Schedule 3 Woody Species	Whole hedge	30 m stretches		
		1	2	3
<i>Crataegus monogyna</i>	Y	Y	Y	Y
<i>Quercus robur</i>	Y		Y	
<i>Ilex aquifolium</i>	Y		Y	
<i>Rosa</i> sp.	Y		Y	
<i>Sambucus nigra</i>	Y			Y
<i>Prunus spinosa</i>	Y		Y	
<i>Euonymus europaeus</i>	Y		Y	
Totals for Schedule 3 species	7	1	6	2

d) Other Woody Species				
Totals for other woody species	0	0	0	0

e) Features	Presence	Comments
Supporting bank or wall	Y	Bank along just over half of hedge (western end)
Less than 10% gaps	Y	One 4 m gap for field gate.
Standard trees	-	One standard <i>Quercus robur</i> at the western end
Ditch for > 50% of length	-	
Parallel hedge within 15 m	Y	
Four or more connection points	-	3 connection points only
Three or more Schedule 2 species	-	Only one species <i>Polypodium</i> cf. <i>vulgare</i>

f) Synopsis	
Mean number species per 30 m stretch	3
Number of features	2
Special qualifying species	-
Threshold altering factors	-

g) General Description
 A roadside hedgerow, subject to frequent maintenance and has recently been cut. Hawthorn is frequent within this hedge and bramble almost smothers the woody species in some places. The central section of this hedge supports a more diverse mix of woody species. This hedge has a single mature pedunculate oak at its very western end. Ivy is also noted to grow through the hedge, and the field layer includes ivy, nettle, cow parsley, bracken and a polypody.

Hedgerow 5

a) Hedge Number	H5
b) Length & no. surveyed 30 m sections	250 m / 3 sections surveyed
c) Surveyor and date	AD, 08/10/19
d) Estimated height (H) and width (W)	H: 4 m / W: 1 m
e) Status	Not important

c) Schedule 3 Woody Species	Whole	30 m stretches		
	hedge	1	2	3
<i>Crataegus monogyna</i>	Y	Y		Y
<i>Quercus robur</i>	Y			
<i>Ilex aquifolium</i>	Y		Y	
<i>Rosa</i> sp.	Y	Y	Y	
<i>Sambucus nigra</i>	Y		Y	Y
<i>Prunus spinosa</i>	Y		Y	
<i>Corylus avellana</i>	Y		Y	Y
<i>Acer campestre</i>	Y		Y	
Totals for <i>Schedule 3</i> species	8	2	6	3

d) Other Woody Species				
Totals for other woody species	0	0	0	0

e) Features	Presence	Comments
Supporting bank or wall	-	
Less than 10% gaps	Y	Several gaps, including a 11 m gap towards northern end.
Standard trees	-	
Ditch for > 50% of length	-	
Parallel hedge within 15 m	-	
Four or more connection points	-	2 connection points only
Three or more <i>Schedule 2</i> species	-	

f) Synopsis	
Mean number species per 30 m stretch	3.7
Number of features	1
Special qualifying species	-
Threshold altering factors	-

g) General Description	
A field hedgerow; most of its length is outside of the proposed development boundary. The hedgerow comprises a mix of native woody species, with a dominant species, and lacks any standard trees. The hedge appears to be cut at the sides only and there are several gaps along its length including one of over 10 m long; at its northern there is a gap of c. 24 m and thus it is separated from the rest of the hedgerow along the western edge of the arable field which connects to Ross's Wood (semi-natural ancient woodland) at its northern end. Ivy, bramble and black bryony grow through this hedgerow and the field layer includes nettle, cleavers and hogweed.	