DAVID CLEMENTS ECOLOGY LTD

MAES Y FFYNON, BONVILSTON

ECOLOGICAL ASSESSMENT

October 2018

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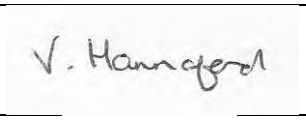
Author:	Vicky Hannaford BSc (Hons)		02/10/2018
Checked by:	Natalie Drury MSc BSc (Hons) MCIEEM		04/10/2018
Version No./Stage	v 1.0 – Final, as issued		

SUMMARY

This report has been prepared by David Clements Ecology Ltd (DCE) on the instructions of Vale of Glamorgan Council (VOGC). It refers to a parcel of land at the end of the cul-de-sac at Maes y Ffynon in Bonvilston, Vale of Glamorgan, South Wales.

It is proposed to redevelop the site although exact details are not available at the time of writing.

The site does not contain or lie immediately adjacent to any statutory sites of nature conservation interest such as Sites of Special Scientific Interest (SSSIs), National Nature Reserves (NNRs) or Local Nature Reserves (LNRs). However, Ely Valley SSSI lies approximately 1.82km to the north east of the site, designated for the presence of a rare plant, monk's-hood (*Aconitum anglicum)*.

The site comprises grassland, with scattered trees, hedgerows, scrub and tall ruderal vegetation. The hedgerows are considered to be of High Local Value as they are a Section 7 habitat and are likely to support a range of common and widespread bird species, common invertebrate species and possibly slow-worm. Bats were seen utilising the hedgerows as commuting routes during the bat transect surveys. The other habitats within the site are considered to be of Local value to wildlife, except for the areas of hardstanding which are considered to be of Negligible value to wildlife.

The impact of any future development is considered to be of no more than local significance. Any negative impacts can however be mitigated and or compensated for through the implementation of appropriate mitigation measures to avoid harm to protected species and habitats during construction and operation.

On the basis of the evidence currently available it is therefore concluded that the site is not unacceptably constrained by biodiversity issues. There may be some potential for impact to protected species such as common reptiles, nesting birds and foraging bats, but these should be readily amenable to mitigation.

Appropriate mitigation and enhancement measures are recommended.

1.0 INTRODUCTION

1.1 This report has been prepared by David Clements Ecology Ltd (DCE) on the instructions of Vale of Glamorgan Council (VOGC). It refers to a parcel of land at the end of the cul-de-sac at Maes y Ffynon in Bonvilston, Vale of Glamorgan, South Wales. The site location and context is shown at Plan 1.

1.2 The site measures approximately 0.13 hectares, encompassing an area at the northern end of Maes y Ffynon at the eastern edge of the village of Bonvilston, at Ordnance Survey grid reference ST 0678574294, and lying at approximately 107m AOD. The site comprises an area of grassland surrounded by trees, within which there is an area of hard standing, formerly the site of five dilapidated garages. Trees along the eastern boundary connect to a small area of woodland adjoining a golf course and open fields. The A48 lies to the south of the site along which there are several villages, including Cowbridge, approximately 6.5km to the west. The wider area, by and large, is rural.

1.3 It is proposed to redevelop the site although exact details are not available at the time of writing.

1.4 The remainder of this report sets out the results of an ecological survey and assessment of the site and bat activity surveys. It also assesses the likely impact of the development and makes recommendations regarding the mitigation of any potentially adverse biodiversity impacts.

1.5 Designated Sites of Biodiversity Interest

Statutory Sites

1.5.1 The site does not contain or lies immediately adjacent to any statutory sites of nature conservation interest such as Sites of Special Scientific Interest (SSSIs), National Nature Reserves (NNRs) or Local Nature Reserves (LNRs). However, Ely Valley SSSI lies approximately 1.82km to the north east of the site, designated for the presence of a rare plant, monk's-hood (*Aconitum anglicum).*

Non-Statutory Sites

1.5.2 The site does not contain or lie immediately adjacent to any non-statutory sites of nature conservation interest such as Sites of Importance for Nature Conservation (SINCs) although there are a number of SINCs within 2km of the site (see Plan 1). Those between 1km and 2km away are listed in Appendix 6 those within 1km of the site are listed below which include:

- Gaer Wood (native woodland; approximately 600m north west of the site)
- Log Wood (native woodland; approximately 600m north east of the site)
- Cottrell Wood (native woodland; approximately 800m north east of the site)
- Redland Wood (native woodland; approximately 900m south east of the site)
- Coed Counsellor (native woodland; approximately 1km north west of the site)
- Coed y Lan (native woodland; approximately 1km south west of the site)

1.5.3 Sites of Importance for Nature Conservation (SINCs) are one of a class of non-statutory nature conservation designations which are recognised throughout the UK under a wide range of titles. Such 'Wildlife Sites' are so-called 'third tier' sites, generally ranked below sites which are of international or national biodiversity significance, but which are considered to have substantive nature conservation value in the sub-national (ie regional or district) context. They are usually designated at the county or county borough level by the relevant local planning authority, and are recognised as a planning constraint in the relevant statutory development plan. The framework for the identification and designation of 'Wildlife Sites' is set out in various Government documents, and is referred to in *Planning Policy Wales* (2017, 9th Edition) and *Technical Advice Note (Wales)* 5: *Nature Conservation & Planning, 2009*.

2.0 APPROACH AND METHODS

2.1 Survey Methodology

Extended Phase 1 Habitat Survey

2.1.1 The site was surveyed on 3rd May 2018 in good weather and was subject to an Extended Phase 1 Survey/Preliminary Ecological Appraisal in accordance with the guidelines published by the Chartered Institute of Ecology and Environmental Management (CIEEM 2013). This was based on the Phase 1 vegetation classification methodology developed by the former Nature Conservancy Council (current version: JNCC 2007), a nationally-accepted and standard method for the rapid survey and appraisal of ecological habitats which is based primarily on the recording of vegetation and its classification into defined habitat categories. Dominant and conspicuous flora species were recorded and 'target notes' were prepared for any features of particular interest.

2.1.2 The methodology also requires the recording of conspicuous fauna species such as birds, herptiles (i.e. amphibians and reptiles), mammals and invertebrates such as butterflies and dragonflies, paying particular attention to the presence (or possible presence) of any rare or protected species.

Surveys for bats

Tree Surveys

2.1.3 The trees on site were surveyed on 3rd May 2018 in good weather. Large standard trees were subject to a preliminary (Phase 1) survey to assess their potential suitability for use by roosting bats. This survey was carried out from ground-level, using close-focusing binoculars, with particular attention being given to the presence of 'potential roosting features' (PRFs) such as those described by Andrews (2016). The trees were individually searched for features which are likely to be attractive to roosting bats such as cavities and rot-holes, splits and cracks, rugose or delaminating bark and dense ivy cover etc, and any such features were recorded together with the average diameter at breast-height (dbh) in centimetres (cm). The inspected trees were then categorised as follows:

1A	**Occupied by bats**	Bats are known to occupy features of the tree, or there is direct evidence of such occupation.	Further detailed survey by bat ecologist required. NRW licence required before any tree works.
1B	**High probability of bat use**	Tree has features which appear to be of high suitability for use by bats. Usually large old trees with numerous and/or well-developed PRFs.	Further surveys by bat ecologist required per BCT (2016) 'high roost suitability'. NRW licence will be required if any bats are found.
2A	**Moderate probability of bat use**	Tree has features which appear moderately suitable for use by bats. Usually large and/or old trees with at least some well-developed PRFs.	Further surveys by bat ecologist required per BCT (2016) 'moderate roost suitability'. NRW licence will be required if any bats are found.

2B	**Low probability of bat use**	Tree has overall low roosting suitability, although some features of low or marginal roosting potential may be present.	Inspection by arborist and/or bat ecologist immediately prior to and during tree works. 'Soft-felling' may be advised.
3	**Negligible probability of bat use**	Usually young and/or small trees, typically below 30cm dbh, lacking any obvious features suitable for use by bats.	No further survey required. No constraint to tree works.

Transect Surveys

2.1.4 Surveys were undertaken during three separate months; May, July and September in 2018 and comprised a bat transect survey undertaken by two bat surveyors and involved walking a pre-determined route, stopping at set points on route for approximately 10 minutes before moving onto the next point. Each observer was equipped with an Anabat SD1 or SD2 bat detector with bat calls recording to CF card for subsequent analysis using the AnalookW call analysis software. The surveyors were also equipped with either a Batbox Duet or a Pettersson D-200 heterodyne detector. All surveys were undertaken on days with suitable weather conditions. Transects started approximately 20 minutes before sunset and ended approximately 1.5-2 hours after sunset. See Plans 4a, 4b and 4c for transect route and bat activity.

2.1.5 Transect surveys were completed on the following dates:

- 22nd May 2018
- 9th July 2018
- 27th September 2018

2.2 Data Trawl

2.2.1 In addition to original survey, a data trawl was carried out with the South East Wales Biodiversity Record Centre (SEWBReC) in order to obtain access to any existing ecological information or records from the site. SEWBReC is the main repository for biodiversity and wildlife records in the south-east Wales region. Relevant records are referred to in the text.

2.3 Survey Constraints

2.3.1 It was difficult to inspect some of the trees closely as they were in full leaf, this has been considered in the assessment and recommendations.

3.0 SURVEY RESULTS

3.1 Habitats & Vegetation

3.1.1 The results of the vegetation and habitats survey are shown on Plan 2 of this report and are described briefly below. Lists of the species recorded are given at Appendix 1, and representative photographs are included at the end of the report.

Notable Plants

3.1.2 Bluebell (*Hyacinthoides non-scripta*), a Schedule 8 species under the amended Wildlife & Countryside Act 1981 was recorded on site and there are also records of this species within 1km (SEWBReC data, 2018).

Notable Habitats

3.1.3 'Hedgerows' are listed as a biodiversity conservation priority under Section 7[1] of the Environment (Wales) Act.

Invasive Non-native Plant Species

3.1.4 The site supports some small stands of montbretia (*Crocosmia* sp) and a small patch of variegated yellow archangel (*Lamiastrum galeobdolon subsp. argentatum*), both invasive non-native plant species, which are subject to statutory regulations aimed at limiting their spread, being listed on Schedule 9 of the amended Wildlife & Countryside Act 1981.

Hardstanding

3.1.5 There is an area of hardstanding in the centre of the site comprising a tarmac road and concrete footings remaining after the demolition of garages.

Semi-improved Grassland

3.1.6 The majority of the site is semi-improved grassland which occurs in two parcels to the east and west of the tarmac access road. The grassland appears to be regularly maintained and had a sward height of approximately 5cm at the time of survey.

3.1.7 The grassland parcel to the west of the access road is more botanically diverse. The dominant species recorded was perennial rye-grass (*Lolium perenne*) with abundant Yorkshire-fog (*Holcus lanatus*) and cock's-foot (*Dactylis glomerata*) and lesser celandine (*Ficaria* verna). There were frequent occurrences of daisy (*Bellis perennis*), white clover (*Trifolium repens*) and cuckoo pint (*Arum maculatum*), with occasional stands of common sorrel (*Rumex acetosa*), selfheal (*Prunella vulgaris*), germander speedwell (*Veronica chamaedrys*), wood avens (*Geum urbanum*) and bluebell, with rare occurrences of primrose (*Primula* sp) and dog violet (*Viola canina*).

[1] In Wales the s.7 list of the EWA 2016 supersedes the s.42 list of the Natural Environment & Rural Communities Act 2006, which in turn replaced the 'Priority Species' lists of the UK Biodiversity Action Plan and its Welsh equivalent.

3.1.8 The parcel of grassland to the east of the access road is also dominated by perennial rye-grass with abundant Yorkshire-fog, cock's-foot and creeping buttercup (*Ranunculus repens*). This area is however less botanically diverse with frequent daisy, white clover, dandelion (*Taraxacum* agg) and occasional stands of cuckoo flower (*Cardamine pratensis*).

Dense Scrub & Tall Ruderal

3.1.9 There are areas of dense bramble (*Rubus fruticosus* agg) along the northern site boundary and in front of the hedgerow on the western site boundary.

3.1.10 There is also a parcel of dense bramble scrub in a mosaic with tall ruderal plants which include cow parsley (*Anthriscus sylvestris*), nettle (*Urtica dioica*), hogweed (*Heracleum sphondylium*), rosebay willowherb (*Chamaenerion angustifolium*) and bracken (*Pteridium aquilinum*). Within this parcel there are also occasional stands of primrose, dog's mercury (*Mercurialis perennis*), marsh marigold (*Caltha palustris*) and fox glove (*Digitalis purpurea*). Montbretia and variegated yellow archangel both invasive non-native species, occurs within this parcel. There are old log piles which have become vegetated with moss as well as piles of brash, leaves and garden arisings within this habitat parcel (see TN1 on Plan 2).

3.1.11 There are parcels of tall ruderal in the north-west corner of the site and also in from of the dense bramble scrub along the northern site boundary. The species present include hogweed, nettle, cow parsley and dock species (*Rumex* sp).

Scattered Broadleaved Trees

3.1.12 There are a number of mature trees scattered across the site within the areas of grassland. The dominant species is sycamore (*Acer pseudoplatanus*) with hawthorn (*Crataegus monogyna*), crab apple (*Malus* sp) and holly (*Ilex* sp). It is understood that at least two of these trees are subject to tree preservation orders. There is one dead tree which remains standing (see T5 on Plan 2).

Hedgerows

3.1.13 A species-rich hedgerow forms the western site boundary which appears to have been coppiced in the past. Hazel (*Corylus avellana*) is the dominant species with sycamore, holly, hawthorn and rose (*Rosa* sp) also present.

3.1.14 A species-rich hedgerow forms part of the southern site boundary adjacent to a residential garden. Beech (*Fagus sylvatica*) is the dominant species with hazel, elder (*Sambucus nigra*), sycamore, hawthorn and Leyland cypress (*Cupressus × leylandii*) also present.

3.1.15 There is a third hedge which forms the northern boundary which has been left unmanaged and is a line of mature trees, Species present include sycamore, hawthorn and oak (*Quercus robur*).

3.2 Fauna

Bats

3.2.1 All species of bat and their roosting sites are protected under the EU Directive on the Conservation of Natural Habitats and of Wild Flora and Fauna (92/43/EEC; the 'Habitats Directive'), implemented in the UK via the Conservation of Habitats & Species Regulations 2017 (the 'Habitats Regulations'). The roosting places used by bats are also protected against unauthorised disturbance or obstruction under the amended Wildlife & Countryside Act 1981. Several bat species, including common and soprano pipistrelle, are listed as priorities for conservation in Wales under Section 7 of the Environment (Wales) Act 2016.

3.2.2 The nearest record of a bat roost is approximately 300m from the site and is that of an unspecified pipistrelle bat and soprano pipistrelle. Other bats roosting within 1km of the site include a long-eared bat species, serotine and a lesser horseshoe bat roost approximately 2.5km away (SEWBReC data 2018). There are a number of records of foraging bats within 1km of the site, including in the immediate surrounding areas, such as common and soprano pipistrelles, noctule, brown long eared, myotis and a single record of a serotine and lesser horseshoe bat (SEWBReC data 2018).

Tree Survey

3.2.3 There are a number of mature trees scattered across the site. Three of the trees were assessed as being suitable for use by roosting bats and are described in Table 1 below with their approximate location shown on Plan 2, the tree numbering follows that of the tree survey report (Treescene 2018). The other trees on site were considered to be Category 3, ie with negligible potential, as their diameter at breast height (DBH) was less than 30cm and or they lacked obvious features suitable to support roosting bats. It was, however, difficult to inspect some of the trees closely as they were in full leaf and it is unlikely that the presence of bats in trees can ever be entirely ruled out.

Table 1: Description of trees with bat potential

Tree No.	Description	Evidence of Bats	Category
T3	Mature sycamore approx. 60cm DBH, ivy clad.	Nil	2B
T5	Standing deadwood approx. 40cm DBH, with lifted bark and broken limbs.	Nil	2B
T17	Mature sycamore approx. 40cm DBH, with patches of lifted bark.	Nil	2B

Transect Surveys

May Survey

3.2.4 The first transect survey was carried out on the 22nd May 2018. The weather conditions were dry, mild and calm with approximately 33-66% cloud cover, the cloud being high and wispy. The temperature was approximately 18ºC at the beginning of the survey. Sunset was 21:08.

3.2.5 Overall the level of bat activity recorded during the survey was moderate. The first bat, a noctule, was recorded at 21:26 roughly 18 minutes after sunset. Other bat species recorded were soprano and common pipistrelle at 21:30 and 21:33 respectively. A serotine bat was recorded at 22:18. Due to the small size of the site it was possible to see the whole site at all times during the survey. As such bats were observed utilising the whole site for foraging while the hedgerows along the northern and eastern boundaries were used as commuting routes to the wider environment.

3.2.6 A tawny owl was heard calling at 21:50 and observed flying from north to south over the site, landing in a tree adjacent to the southern boundary.

July Survey

3.2.7 The second transect survey was carried out on the 9th July 2018. The weather conditions were dry, warm and calm, with sparse cloud cover. The temperature was approximately 25ºC at the beginning of the survey. Sunset was 21:29.

3.2.8 A higher level of bat activity was recorded and observed across the site during this survey. The first bat, a soprano pipistrelle, was recorded at 21:47, approximately 29 minutes after sunset. The first bat observed was approximately 21:48, a pipistrelle species, commuting along Maes y Ffynon towards the site. The majority of the calls recorded were those of soprano pipistrelle with the occasional common pipistrelle. Three calls of a noctule bat were recorded at 22:29, 22:38 and 22:43 and two calls of myotis species were recorded at 22:09 and 22:52. For the duration of the survey bats were observed commuting and foraging over the site and along the adjacent hedgerows.

September Survey

3.2.9 The final transect survey was carried out on the 27th September 2018. The weather conditions were dry, mild and calm with a clear sky. The temperature was approximately 15ºC at the beginning of the survey. Sunset was 19:01.

3.2.10 The first bat, a common pipistrelle, was recorded at 19:16, approximately 15 minutes after sunset, the bat flew across the site from the south west and over the hedge to the east. A soprano pipistrelle was observed and heard at 19:18, foraging over the site. Common and soprano pipistrelle bats were recorded and observed commuting and foraging over the site constantly until 19:24 with as many as three bats seen at any one time, after which time activity became more sporadic. An unidentified pipistrelle was observed foraging around the nearest street light on Maes y Ffynon from approximately 20:10 until 20:20. Pipistrelle bats were the only species recorded utilising the site during this survey.

Dormouse

3.2.11 Dormouse is also a 'European protected species' afforded legal protection which is similar to that of bats (see above). It is also a Section 7 listed species.

3.2.12 Hedgerows along the western and southern boundary both contain hazel the favoured food source for dormouse, as well as hawthorn and bramble which are also favoured.

The site and the habitats within it are relatively disturbed and there is limited connectivity of potentially suitable habitat. There are however no records of this species within 1km of the site, the nearest being approximately 1.8km to the north west of the site (SEWBReC data 2018). The probability of dormouse occurring within the site is therefore considered to be low.

Otter

3.2.13 Otter is also a 'European protected species' afforded legal protection which is similar to that of bats (see above). It is also a Section 7 listed species.

3.2.14 Otter are present in many of the main river systems in Wales, having now recovered much of its former range following its sharp decline in the 1970s and 1980s, although numbers often remain at lower levels than was previously the case.

3.2.15 There are no watercourses or waterbodies within or immediately adjacent to the site, although there are some waterbodies and streams within the wider area. There are no records of otter within 1km the site (SEWBReC data 2018). Although the habitats within the site appear superficially suitable for otter, they are relatively isolated from watercourses and sites where otter is known to occur. The likelihood of otter occurring within the site is therefore considered to be negligible.

Badger

3.2.16 Badger is fully protected in the UK under the terms of the Protection of Badgers Act 1992. Protection applies both to the animal itself, which may not be intentionally killed, injured or captured, and to its nesting burrows (setts), which may not be intentionally destroyed, damaged or disturbed except under certain specified and/or licensed conditions. Current interpretation of the Act also infers a degree of protection to areas which are of key significance to foraging badgers.

3.2.17 There is one record of badger road kill approximately 1.2km away from the site (SEWBReC data 2018) however no evidence was found during the survey to suggest that this species utilises any habitats within the site. The site does support habitats such as grassland and scrub which could potentially be suitable for use by this species, although they are limited in extent. Badgers are therefore considered unlikely to be present on site, although they may commute across the site on occasion.

Other Mammals

3.2.18 Other mammal records for the wider area which are considered to be a priority for conservation include those for weasel, brown hare, harvest mouse and polecat, it is also likely that a range of common mammal species could occur (SEWBReC data, 2018). These could include, for example, resident synanthropic species such as house mouse and brown rat, as well as open country species such as bank vole, mole or rabbit etc, and casual visitors such fox.

Birds

3.2.19 Nearly all species of bird are protected as individuals under the amended Wildlife & Countryside Act 1981, and this protection extends to their nests, eggs and young. A number of especially rare species listed on Schedule 1 of the Act are also subject to enhanced protection against disturbance whilst nesting.

3.2.20 A range of birds were recorded during the survey which included blackbird, blue tit, magpie, great tit, robin and wood pigeon.

3.2.21 Species which have been recorded flying over the site and in the wider area include species of conservation significance such as house sparrow, spotted flycatcher, dunnock, song thrush, linnet, starling and bullfinch, cuckoo, kestrel, lapwing, reed bunting, skylark, tree pipit some of which might also be expected to nest within the site, at least on occasion. Other species recorded in the wider vicinity include notable and Schedule 1 species such as fieldfare, redwing, kingfisher, black redstart, peregrine falcon, hobby, red kite, brambling, quail, merlin and barn owl, but none of these are considered likely to breed within the site itself. (All SEWBReC data 2018.)

Reptiles

3.2.22 Four native reptile species occur in South Wales, comprising common lizard, slow-worm, adder and grass snake. These four species are all afforded so-called 'partial protection' under the amended Wildlife & Countryside Act 1981, which prohibits the deliberate killing or injury of individuals. However, there is no direct protection extended to the habitats which support these species. All four common reptiles are listed as 'Section 7' species in Wales.

3.2.23 There are several records of grass snake within 1km of the site, the nearest being 78m away (SEWBReC data, 2018). Grassland, hedgerows and scrub habitat have the potential to support a reptile population and their presence on the site cannot be ruled at least on occasion.

Amphibians

3.2.24 Five native amphibian species occur in South Wales, comprising common frog, common toad, smooth newt, palmate newt and great crested newt. The latter species is a nationally rare and declining afforded full protection under both UK and European legislation (see under bats, above), which also extends to the habitats which support it. The other four species are not afforded any direct statutory protection, other than with respect to trade, but common toad and common frog are both listed as 'Section 7 species' in Wales.

3.2.25 There are no waterbodies within the site although there are several within the wider area, the nearest being approximately 100m to the east of the site. There are several records of common frog, common toad, smooth newt and palmate newt from the same location within 240m of the site (SEWBReC data 2018) and it is also considered possible all of these species could utilise the habitats within the site for foraging and commuting etc, at least on occasion.

3.2.26 There are several records of the rare and specially protected great crested newt (GCN), the nearest being approximately 80m from the site, found dead in a garden. Other records are from approximately 240m away in a garden pond (SEWBReC data 2018). The presence of great crested newt within the site, at least during their terrestrial phase, cannot be ruled out, at least on occasion.

Invertebrates

3.2.27 Upwards of 30,000 species of terrestrial and freshwater invertebrates are recorded in Britain, including some 27,000 insect species, occurring in every available habitat. About 40 invertebrate species are afforded full statutory protection in the UK under either European or British legislation, and many other species are accorded varying levels of conservation importance.

3.2.28 There are a number of butterfly and moth records, all Section 7 species, from approximately 250m away in a resident's garden e.g beaded chestnut, buff ermine, dusky brocade, rosy minor and rustic. The site is assessed as being likely to support a range of common and ubiquitous invertebrate species, as well as offering scope for other less common species. There will be a supply of nectar sources during the summer months and a range of micro-habitat types.

4.0 ECOLOGICAL EVALUATION

4.1 There is currently no nationally accepted system for the categorising of sites or features of biodiversity significance below the level of national value, criteria for which are set out by the former Nature Conservancy Council (1989, as amended). However, guidance for the identification of non-statutory sites of county significance (ie SINCs) is available in this instance (WBP 2008).

4.2 For the purposes of this study the habitats and features of the site have therefore been provisionally evaluated and graded in accordance with the categories set out in Appendix 2. The ecological assessment of the site is shown on Plan 3.

International, National, County Value & District Value

4.3 No parts of the site are considered to fall into any of these categories.

Local Value

4.4 The hedgerows are considered to be of High Local value as they are a Section 7 habitat and it is likely to support a range of common and widespread bird species and common invertebrates as well as providing commuting corridors for bats, reptiles and amphibians.

4.5 The other habitats within the site are considered to be of Local value to wildlife. The grassland areas are likely to provide nectar sources for pollinating invertebrates and the scattered trees and dense scrub would also provide suitable cover for nesting birds.

4.6 There are some mature trees which have the potential to support roosting bats, and if confirmed to be present, would have greater, potentially High Local value for wildlife.

Negligible Value

4.7 The areas of hardstanding are considered to be of Negligible value to wildlife.

5.0 ASSESSMENT OF DEVELOPMENT IMPACTS

5.1 It is proposed to redevelop the site, however the exact details are not known at the time of writing.

5.2 The proposed works are unlikely to have any impact on the nearby non-statutorily protected sites due to their distance from the site.

5.3 The hedgerows are Section 7 habitats and as such are assessed as having High Local Value and should ideally be incorporated within the development. If retention of the hedgerows is not possible their loss should be compensated for.

5.4 Three of the scattered trees have potential to be used by bats for roosting purposes and should, where possible, be retained. If removal is necessary, it should be carried out using a precautionary approach and appropriate compensation put in place.

5.5 During the bat transect surveys four species of bat were recorded using the site for foraging and the hedgerows for commuting to the wider environment. Low numbers of common and soprano pipistrelle bat species were recorded with noctule and serotine bat species recorded occasionally. All four species are known to feed around street lighting therefore it is considered the development will not adversely affect these species. However, the behaviour of particularly light shy species e.g. lesser horseshoe and brown long eared bats, both known to be within the vicinity of the site, have the potential to be disrupted by the proposed development. Mitigation measures are provided in Section 6 to minimise further disturbance to commuting and foraging bats using the site.

5.6 Trees and scrub are likely utilised by nesting birds. Appropriate mitigation measures will need to be implemented and are detailed in Section 6.

5.7 The remaining habitats of the development site are not considered to have more than Local Value to wildlife, and as such development of these are considered to be of relatively minor significance and any impacts not likely to extend beyond the immediate vicinity. Any impacts should as such be amenable to mitigation measures.

5.8 As such, it is considered on current evidence that the proposed development of this site is not unacceptably constrained by biodiversity issues.

6.0 RECOMMENDATIONS

6.1 Statutory Obligations

6.1.1 The following are mandatory requirements under current legislation:

1. In the unlikely event that any specially protected species, such as bats or great crested newt are discovered anywhere on the site at any point prior to or during clearance or construction, all work in the immediate area must cease immediately and appropriate expert advice sought.

2. Clearance and construction must not cause disturbance or harm to any birds which are nesting on the site at the time. In the event that any nesting birds are discovered immediately prior to or during any works, all work in the immediate area must cease immediately and appropriate expert advice sought.

3. Clearance and construction must be preceded by appropriate and adequate measures to minimise the risk that common reptiles are killed or injured.

6.1.2 In 1-2 above, the 'immediate area' should include any occupied tree in its entirety, and any other habitats for an area of at least 5m radius around the find-site. The affected area should be clearly demarcated on the ground (eg by means of striped bunting) and made off-limits to all site personnel until inspected by an appointed expert. Appropriate measures to rectify the situation in accordance with statutory obligations and responsibilities should be determined at the time by the appointed expert, and may include consultations with the statutory agencies and the seeking of derogation licences etc.

6.1.3 Clearance works affecting the above-ground parts of trees and shrubs, including bramble scrub, should avoid the main bird-nesting season which runs approximately from March to August inclusive. If works must be carried out during this period, they must be preceded by a nesting bird survey. If nesting birds are found to be present the nest and immediate area, as described above, should be protected until the young have fledged. This restriction also applies to any other habitats which are found to support nesting birds, including any ground-nesting species.

6.1.4 Where the clearance of potential bird-nesting habitats is projected to occur at some unknown point in the future, the above-ground vegetation should ideally be cut down (eg coppiced) to approximately 200mm height over the winter period in order to render it unattractive to nesting birds, and then maintained in this condition by regular re-cutting until the start of site clearance operations.

Bats

6.1.5 Once the development footprint is finalised, any large trees which will be affected should be closely inspected by a licenced bat ecologist or arborist, prior to being subject to any management works and or felling. Where evidence of roosting bats is found, the appropriate actions must be undertaken in accordance with current legislation and best practice.

6.1.6 Treatment of all other trees (and any larger trees where there is no evidence of roosting bats) should also follow a precautionary approach with trees retained where possible, as it is difficult to entirely rule out the presence of roosting bats within trees.

Common Reptiles

6.1.7 The grassland, hedgerows and scrub could provide suitable habitat for slow worms. A precautionary approach towards reptiles should therefore concentrate primarily on minimising the potential for causing the death and injury of individuals during site clearance and operation, which is a statutory requirement.

6.1.8 Adequate mitigation for reptiles in this instance should be achievable through the implementation of 'species deterrence' measures, which would comprise the staged removal of vegetation cover in the affected areas ahead of the development, together with the careful dismantling and removal of any potential refuge areas such as large stones, log piles, etc. It should be noted that these operations would be seasonally constrained and could not be carried out during the winter hibernation period (ie November to March).

6.1.9 A detailed method statement with respect to reptiles should be included within a Wildlife Protection Plan and agreed in advance with the Local Authority ecologist, prior to the commencement of site clearance and construction. Current NRW guidance with respect to reptile mitigation is provided at Appendix 5.

Invasive Non-native Plant Species

6.1.10 The invasive species montbretia and variegated yellow archangel are present on site and are listed on Schedule 9 of the Wildlife and Countryside Act 1981 which specifically prohibits its reckless or deliberate spread. A method statement should be drawn up in relation to these Schedule 9 species to ensure that they are eradicated from the site and are not allowed to spread beyond it. The method statement should be agreed in advance with the council Ecologist and implemented accordingly.

6.2 Other Recommendations

6.2.1 Contractors should be provided with a 'toolbox talk' at the outset of site clearance and construction works setting out the known and possible habitat and species constraints, and the mitigation measures which are required. The toolbox talk should also set out procedures to be followed in the event that there are unexpected encounters with protected species etc. All contractors carrying out dense bramble scrub or tree clearance works (if appropriate), should be warned of the possible presence of nesting birds, roosting bats, common reptiles, amphibians and of their protected status. It should be clearly understood that in the event of any being found during works, all works should cease in the affected area until appropriate expert advice has been sought.

6.2.2 Any retained habitats should be securely fenced off with appropriate temporary fencing (eg 'Heras' fencing) at the start of construction work to prevent access and incidental damage by site vehicles, equipment and personnel.

6.2.3 All retained trees should be treated in accordance with British Standard BS5837 (2012) *Guidance for the Treatment of Trees in Relation to Construction*. Damage to mature trees, as well as tree and scrub understorey should be avoided wherever possible.

6.2.4 Building compounds and storage areas should not be sited on areas of habitat which are to be retained or in the off-site habitats, and should be suitably fenced and bunded where they stand adjacent to semi-natural habitats. Similarly no equipment, machinery or materials should be brought into the retained areas, or stored under retained tree canopies, or ground levels altered within these clearly demarcated zones of protection.

6.2.5 Careful consideration should be given to the use of lighting within the developed site, as this can adversely affect activity by a variety of fauna, particularly foraging bats, nesting birds and invertebrates. In the event that lighting is required, the edges of woodland and peripheral tree corridors should be retained as dark corridors. Light spillage into adjacent habitats such as scrub and grassland etc should be avoided, and brightness kept to the lowest permissible level in the areas adjacent to such habitats.

6.2.6 As hedgerows are a Section 7 priority habitat, their loss or degradation should be avoided. If this is not possible suitable compensation, either by translocating or replacement hedgerows, should be considered. Replacement hedgerows should be replaced on a like-by-like basis as a minimum with native species which are indigenous to the region, and from stock which is of local (or at least UK) provenance and also contain a good range of wildlife friendly plants (see Appendix 3 for example species). Retained and / or new hedges should be managed so as to maintain the continuity of woody habitats around and through the new development, linking-in with adjacent woody habitats off site.

6.2.7 To provide ecological enhancement following the development, consideration should be given to the erection of bat roosting and bird nesting boxes in suitable trees around the site. These should be sited in such a manner that predators such as cats cannot reach them, and be at least 4m (preferably 5m) above ground level. The entrances to bat boxes should not be illuminated at night. Bat boxes should ideally be of 'woodcrete' construction (such as those manufactured by Schwegler Ltd), since these are much more robust and longer-lived than traditional wooden boxes and require less after-maintenance. Further advice is given at Appendix 4.

6.2.8 A Wildlife Protection Plan (WPP) should be drawn up for the site clearance and construction stages, setting out detailed measures to ensure that the identified interests, potential interests and statutory obligations etc are appropriately treated, and identify the individuals who will be responsible for ensuring that the ecological mitigation requirements are met. The WPP should be agreed in advance by the Local Authority Ecologist, with responsibility for its implementation assigned to an appropriately qualified and/or experienced member of the development team who would act as an 'Ecological Clerk of Works'.

6.2.9 The services of an appropriately qualified and licensed ecologist should be available on an 'on-call' basis throughout the development in order to deal promptly with any protected species or other ecological matters which may arise during the clearance and construction works.

7.0 REFERENCES

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APPENDIX 1: SPECIES RECORDED

All species recorded by DCE 2018, unless otherwise indicated

Species	Common Name	SINC Indicator Species					
Trees & Scrub		**W**	**NG**	**CG**	**AG**	**MG**	**PIL**
Acer pseudoplatanus	sycamore						
Corylus avellana	hazel						
Crataegus monogyna	hawthorn						
Fagus sylvatica	beech						
Ilex aquifolium	holly						
Malus sylvestris	crab apple	W					
Quercus robur	pedunculate oak						
Rubus fruticosus agg	bramble						
Sambucus nigra	elder						
X Cuppressocyparis leylandii	leyland cypress						
Herbaceous Plants							
Anthriscus sylvestris	cow parsley						
Arum maculatum	cuckoopint						
Bellis perennis	daisy						
Caltha palustris	marsh-marigold					MG	
Cardamine pratensis	cuckooflower		NG			MG	
Chamerion angustifolium	rosebay willowherb						
Crocosmia sp	montbretia						
Dactylis glomerata	cock's-foot						
Digitalis purpurea	foxglove						
Ficaria verna	lesser celandine						
Geum urbanum	wood avens						
Heracleum sphondylium	hogweed						
Holcus lanatus	yorkshire fog						
Hyacinthoides non-scripta	bluebell	W					
Lamiastrum galeobdolon subsp. argentatum	variegated yellow archangel						
Lolium perenne	perennial rye-grass						
Mercurialis perennis	dog's mercury	W					
Primula sp	primrose species						
Prunella vulgaris	self heal						
Pteridium aquilinum	bracken						
Ranunculus repens	creeping buttercup						
Rumex acetosa	common sorrel						PIL
Rumex sp	dock					MG	
Taraxacum officinalis agg	dandelion						
Trifolium repens	white clover						
Urtica dioica	common nettle						
Veronica chamaedrys	germander speedwell						
Viola canina	heath dog-violet				AG		

Key
PS - Regionally Scarce - Primary Species in SWWSP (2004)
CS - Regionally Uncommon - Contributory Species in SWWSP (2004)
Indicator Species (SWWSP 2004)

W - Woodland, NG - Neutral Grassland, CG - Calcareous Grassland, AG – Acid Grassland, PMG Purple Moor Grass and Rush Pasture, PIL – Post Industrial Land, TF Species-rich Tillage Fields and Margins

SINC Selection

Sites which support 1 primary species or 5 contributory species or habitats which support 8 neutral grassland, 8 calcareous grassland, 7 acid grassland, 12 Purple Moor Grass and Rush Pasture or 8 tillage field and margins indicator species should be considered for selection as a SINC. Post Industrial sites which support 20 or more indicator species from the combined post-industrial land, acid, neutral, calcareous and marshy grassland lists should also be considered for selection.

APPENDIX 2: DEFINITIONS OF SITE VALUE

International Value

Site carrying an internationally recognised designation such as Ramsar Site, World Heritage Site, Special Protection Area, Special Area of Conservation, Biosphere Reserve or Biogenetic Reserve, or:

Habitats: site supporting nationally significant areas of habitats of defined international community interest.
Species: site supporting nationally significant populations of species of defined international community interest.

National Value

Site meeting published Site of Special Scientific Interest (SSSI) designation criteria (NCC 1989), whether so designated or not.

Habitats: site supporting nationally significant areas of habitats of defined national rarity or interest.
Species: site supporting nationally significant populations or communities of UK Red Data Book, Nationally Notable or protected species (other than badger).

County Value

Site identified as a County Wildlife Site (CWS), Site of Importance to Nature Conservation (SINC) or similar at the county level (ie greater than district, borough or city level); meeting published CWS designation criteria (where these exist), but falling short of SSSI designation criteria, whether designated as a CWS or not.

Habitats: site supporting good examples of nationally threatened habitats, or extensive areas of habitats which are rare or unique in the county.
Species: site supporting large or strong populations or communities of nationally rare or protected species (other than badger), or of species which are rare in the county and uncommon nationally.

District Value

Sites failing to meet County Value criteria, but nevertheless supporting habitats, species or communities which appreciably enrich the ecological resource of the county, especially by virtue of their size or extent.

Habitats: sites supporting habitats uncommon in the county, small but unmodified fragments of nationally threatened habitats, or comprising extensive areas or systems of semi-natural habitats.
Species: sites supporting nationally rare species, or strong populations or communities of regionally uncommon species, which would not otherwise be present (ie they are critically dependant on the site characteristics).

Local Value

Habitats which fail to meet District Value criteria, but which appreciably enrich the ecological resource of the locality. This category can be further divided into:

- **High Local Value**: just failing to meet District Value Criteria; supporting species which are notable or uncommon in the county; or species which are uncommon, local or habitat-restricted nationally, and which might not otherwise be present in the area.

- **Local Value**: sites which are of ecological value only in the context of their immediate surroundings. Rare or uncommon species may occur but are not restricted to the site or critically dependant upon it for their survival in the area.

Sites failing to meet any of the above can be considered as being of '**Negligible**' ecological value.

APPENDIX 3: LANDSCAPING SPECIES

Trees and shrubs

All planting stock should be of native species which are indigenous to the region and will be of Welsh or at least UK, provenance.

Trees/shrubs	
Quercus robur and/ or	Pedunculate oak
Quercus petraea	Sessile oak
Fraxinus excelsior	Ash
Acer campestre	Field maple
Corylus avellana	Hazel
Crataegus monogyna	Common hawthorn
Betula pendula	Silver birch
Cornus sanguinea	Dog wood
Ilex aquifolium	Holly
Malus sylvestris	Crab apple
Prunus avium	Wild cherry
Prunus spinosa	Blackthorn
Rosa canina	Common dog-rose
Sorbus aucuparia	Rowan
Taxus baccata	Yew
Viburnum opulus	Guelder rose
Euonymus europaeus	Spindle
Sambucus nigra	Elder

Planting should be carried out using 600mm bare-rooted transplants in spiral plastic guards (rabbit/vole protection) where appropriate. Standard tree aftercare should be applied.

Climbers	
Clematis vitalba	Traveller's-joy
Lonicera periclymenum	Honeysuckle
Solanum dulcamara	Bittersweet
Tamus communis	Black bryony

Wildlife friendly plants for formal landscaping

The species listed below are primarily non-native species, which are commonly found in gardens and formal landscape areas. Those native species included are aesthetically pleasing and suitable for formal planting schemes.

Woody Species

Bodnant viburnum (*Viburnum* x *bodnantense*)
Californian lilac (*Ceanothus spp.*)
Firethorn (*Pyracantha spp.*)
Laurustinus (*Viburnum tinus*)
Japanese quince (*Chaenomeles japonica*)
Lilac (*Syringa vulgaris*)
Mahonia (*Mahonia spp.*)
Mock orange (*Philadelphus spp.*)
Serviceberry (*Amelanchier canadensis*)
White jasmine (*Jasminium officinale*)

Herbs

Alpine rock-cress (*Arabis alpina*)
Angelica (*Angelica archangelica*)
Annual honesty (*Lunaria annua*)
Aubretia (*Aubretia deltoidea*)
Autumn Stonecrop (*Sedum* 'Purple Emperor')
Borage (*Borago officinalis*)
California poppy (*Eschscholtzia californica*)
Canadian Fleabane (*Erigeron canadensis*)
Orpine (*Sedum telephium*)
Perennial cornflower (*Centaurea montana*)
Perennial honesty (*Lunaria rediviva*)
Perennial sunflower (*Helianthus decapetalus*)
Phlox (*Phlox paniculata*)
Poached-egg plant (*Limnanthes douglasii*)
Purple coneflower (*Echinacea purpurea*)
Purple-top vervain (*Verbena bonariensis*)

Candytuft (*Iberis sempervirens*)
Christmas rose (*Helleborus niger)*
Common mallow (*Malva sylvestris*)
Common poppy (*Papaver rhoeas)*
Cosmos (*Cosmos bipinnatus*)
Evening primrose (*Oenothera biennis*)
Wood forget-me-not (*Myosotis sylvatica*)
French marigold (*Tagetes spp.*)
Globe thistle (*Echinops ritro*)
Great mullein *(Verbascum thapsus*)
Grecian windflower (*Anemone blanda*)
Heart-Leaf Ice-plant (*Aptenia cordifolia*)
Hollyhock (*Althaea rosea*)
Hyssop (*Hyssopus officinalis*)
Ice plant (*Sedum spectabile*)
Lacy phacelia (*Phacelia tanacetifolia*)
Late Michaelmas-daisy (*Aster* x *versicolor*)
Lavender *(Lavandula angustifolia.)*
Lenten rose (*Helleborus orientalis*)
Ox-eye daisy (*Leucanthemum vulgare*)
Marjoram (*Origanum vulgare*)
Red campion (*Silene dioica*)
Red valerian (*Centranthus rubber*)
Rosemary (*Rosmarinus officinalis*
Sage *(Salvia officinalis*)
Shrubby Veronica *(Hebe recurva*)
Snapdragon (*Antirrhinum majus*)
Soapwort (*Saponaria officinalis*)
Spear mint (*Mentha* spicata)
Spring crocus (*Crocus chrysanthus*)
Sunflower (*Helianthus annuus*)
Sweet alyssum (*Lobularia maritime*)
Sweet bergamot (*Monarda didyma*)
Sweet rocket (*Hesperis matronalis)*
Sweet William (*Dianthus barbatus*)
Tickseed *(Coreopsis spp*)
Tobacco plant (*Nicotiana affinis*)
Wallflower (*Cheiranthus cheiri*)
Winter aconite (*Eranthis hyemalis*)
Yellow alyssum (*Alyssum saxatile*)
Yellow loose-strife *(Lysimachia vulgaris*)

Sources: *Plants for wildlife friendly Gardens* (Natural England), *Planting Gardens for Birds* (RSPB), *Gardening for Bats* (Bat Conservation Trust) and *Starting a Butterfly Garden* (*School Garden Company*).

APPENDIX 4: BAT & BIRD BOXES EXAMPLES

Schwegler 2F bat box

Schwegler 1FR wall integrated bat box, can be rendered over, just leaving entrance

Schwegler 27 wall integrated bat box, can be rendered over

Schwegler 1FQ wall-mounted bat box

Schwegler 2FF wall-hanging bat box

Schwegler 1WI integral wintering bat box, can be rendered over

Schwegler 1B bird box

Schwegler 2H robin box

Schwegler 1SP Sparrow Terrace

APPENDIX 5: REPTILE MITIGATION MEASURES – NRW GUIDANCE (CCW Draft Feb 2005)

For any development site which supports reptiles, or which contains habitats with the potential to support reptiles, NRW recommends detailed survey at an early stage. Where suitable survey information is unavailable, however, or where there is insufficient time to carry out the necessary surveys, it should be assumed that any habitats on the site which are suitable for reptiles do indeed support reptiles, and mitigate accordingly.

Legislation

The four most common British reptiles (comprising grass snake, adder, slow-worm and common lizard) are afforded so-called 'partial protection' under the Wildlife and Countryside Act 1981 (as amended). This protects individuals of all species from 'intentional' or 'reckless' killing and injury, but does not confer any direct protection to the habitats which support them.

Where it can reasonably be predicted that reptiles could potentially be killed or injured by activities such as site clearance, earthworks or construction operations etc, to carry out such activities in the absence of appropriate mitigation could legally constitute intentional or reckless killing or injuring, and could result in prosecution.

Where reptiles (other than sand lizard, smooth snake and turtles, all of which are subject to additional restrictions under the law) are present, or potentially present, on a development site, the developer should consider the need for mitigation at an early stage in the development programme. The presence of reptiles on a development site will not necessarily prevent the development from taking place, but it means that 'reasonable' mitigation measures must be put in place to prevent, as far as possible, the killing or injuring of any reptiles.

It is not necessary to obtain a licence to carry out works which affect reptiles, but it is always advisable to seek guidance in any case where a development could potentially cause impacts to reptiles, and to obtain advice regarding what would constitute 'reasonable' mitigation, although it is ultimately up to the developer to decide what is 'reasonable' (and to accept any consequences which may ensue). In most cases, the services of an appropriately qualified and experienced reptile consultant will be required.

The remainder of this document sets out the main elements of a typical reptile clearance strategy. It is recognised, however, that not all of the elements listed below will be necessary or appropriate in all cases, and that individual strategies will vary from site to site.

Reptile Clearance Methodology

If reptiles are confirmed as being present (or are assumed to be present, for example from habitat assessment) then measures should be put in place to avoid or minimise the killing and injuring of reptiles as a result of development operations. Ideally, a 'Reptile Mitigation Strategy' should be drawn up for the site by a suitably qualified person, and agreed in advance with either the NRW or the relevant Local Authority Ecologist.

Wherever possible, reptiles should be accommodated within the site, or on one or more adjacent or nearby site. The translocation of reptiles to a different site which lies at a distance from the development site should only be undertaken as a last resort. Where reptiles cannot be accommodated within the site, a suitable receptor site should be identified in advance and surveyed for suitability. If a reptile population already exists on the receptor site, then advance enhancement works to increase the 'carrying capacity' of the receptor site may be necessary Adequate time should be allowed in the development programme for the safe clearance of reptiles ahead of any potentially harmful works using suitable means, which may vary from site to site.

It should be noted that the clearance of reptiles from a site can only be undertaken when the reptiles are active (ie, during the spring, summer and autumn months) and should never be attempted during the winter hibernation period (which runs approximately from November to March inclusive). This constraint may lead to conflict with other issues – the presence of nesting birds, for example, all species of which are protected against disturbance – which will also need to be taken into account and mitigated for accordingly[2].

[2] Hedgerow translocations or clearance of habitats such as trees, scrub, bramble or reedbed etc can lead to direct conflicts, which may require phased clearance or other mitigation measures to overcome.

Mitigation measures should apply to all areas of the site which will be subject to potentially harmful impacts, including the laying of haul routes, siting of contractors' compounds and the bulk storage of materials and soils etc. It should be remembered that reptiles may be present beneath the soil at depths of up to 250mm or more, as well as in locations such as amongst tree roots or buried rubble and brick waste etc.

Typical Mitigation Procedure

1. Where there are suitable receptor sites adjacent to the development site, mitigation should commence with the removal of tall vegetation from all areas affected by development to make them less attractive to reptiles, and to encourage them to move away voluntarily into adjacent habitats. Vegetation should initially be cut to a height of about 200mm, starting furthest away from the adjacent habitats and working towards them, so as to drive any reptiles which may be present towards the receptor habitats. All cutting must be done by hand (eg by strimmer or brush-cutter), rather than by tractor-drawn mowers, so as to minimise the risk of causing reptile casualties. All arisings should be removed immediately from the site following cutting.

   After a maximum of two days, the vegetation of the site should be cut again in a similar pattern to a height of about 50mm, taking great care to avoid injuring any reptiles which may be present and with all arisings again being removed from the site. The vegetation of the site should then be maintained in this short condition for a minimum of two further days before proceeding to Step 2.

In some rare situations this staged cutting, coupled with the careful removal of any structures which may be used by sheltering reptiles (eg rubble piles, timber piles, drystone walls etc – see Step 3 below) may be sufficient to achieve 'clearance' of the site by rendering it so unsuitable for reptiles that no further measures are required. In these circumstances, the site should then be maintained in this unsuitable condition until the commencement of development works, which should then be preceded by 'destructive searching' (see Step 8 below). These situations are likely to be very unusual, however, and will require careful assessment in advance by an appropriately qualified person.

Where there are no suitable habitats in the surrounding area for reptiles to relocate to (for example if the site is surrounded by roads or hard standings, or is hemmed in by other developments) then this step should be ignored.

2. Reptile-proof fencing should be erected around the perimeter of the affected areas of the site. These should be erected in accordance with published specifications such as that contained in the Highways Agency's *Design Manual for Road & Bridges* (Vol 10(4) (7) HA116/05 *Nature Conservation Advice in Relation to Reptiles and Roads* or the forthcoming *Reptile Mitigation Guidelines* (English Nature). The fencing will normally be required to extend below ground level for a depth of about 250mm, and both the installation and fabrication process may require careful supervision by a suitably qualified reptile handler to ensure that no reptiles are accidentally injured in the process. On large sites it may be useful, and will probably speed up the process, if the site is subdivided into smaller parcels.

   Reptile-proof fences may be either vertical 'no-pass' fences or sloping 'one-way' fences. The former will prevent the movement of reptiles in either direction, whilst the latter can be erected in areas where the site lies immediately adjacent to a suitable receptor sites, and will allow reptiles to leave the development area voluntarily.

3. Within the enclosed parcels, any rubble piles, drystone walls, tree roots, buried rubble and timber piles etc should be dismantled by hand to prevent reptiles from using them to shelter in. All arisings should be removed from the site. As far as possible, these operations should be carried out by hand, with the minimum tracking by any vehicles or machinery across the site. Complex or large structures may need to be carefully dismantled under the supervision of a reptile handler who can halt the works and rescue any reptiles which may be found sheltering in them.

4. Following the clearance of sheltering places, the vegetation of the enclosed parcel should be cut, if it has not already been so. Cutting should initially be to a height of about 200mm, starting at the centre of the parcel and working outwards towards the edges. All cutting must be done by hand (eg by strimmer or brush-cutter), rather than by tractor-drawn mower, so as to minimise the risk of causing reptile casualties. All arisings should be removed immediately from the site following cutting.

   Note that for a linear site, such as a cycle-path or verge, strimming should be undertaken from the path working ahead and outwards at the same time, effectively cutting a 'V'-shape.

5. After cutting, the site should be strewn with 'refugia'. These should comprise a combination of suitable materials such as sheet metal, timber (eg chipboard), roofing felt and carpet tiles. These will be used by reptiles for sheltering beneath, or for basking on, where they can be found and caught more easily. If the vegetation is already shorter than 200mm, refugia may be laid out straight away without cutting the vegetation. Refugia should be spread evenly around the site at a high density (ie about 100 per hectare).

6. Depending on the site, visits should be made to the site by a reptile handler over at least the next two days to check beneath the refugia, collect any reptiles which may be beneath them and remove them to the receptor habitats. In practice, it will usually take at least a week for the refugia to 'bed in', and daily reptile collection visits may need to take place over a period of several weeks. Reptile collecting visits must be undertaken in suitable weather conditions, ie in dry, still conditions with air temperatures in excess of 10°C.

7. Daily or near-daily reptile collection and removal visits should continue until reptile numbers under the refugia begin to decline noticeably, at which point the vegetation of the site can be cut again, using the same methodology as at Step 4, but this time to a height of 100mm. Daily reptile collection and removal visits should continue for a further minimum of three days, in suitable weather conditions.

8. When reptile numbers are again detected to be declining, a final cut can be made to achieve very short, close-cropped vegetation of about 40-50mm height, again using the same methodology as at Step 4. This staged removal of the vegetation is likely to drive reptiles to make greater and greater use of the refugia, by removing alternative sheltering places and rendering the rest of the site unattractive to reptiles.

Depending on the individual circumstances of the site, it may be advisable to review the spread and location of refugia, and to begin to cluster these towards the edges of the site or in selected locations, although if this is done then the areas where refugia are no longer present must be kept in a highly unattractive state for reptiles. The manipulation of refugia numbers and locations may be used to reduce the amount of time needed for a reptile handler to check for reptiles. On a small site, however, there is probably no point in moving the refugia, and moving refugia may reduce capture efficiency[3]. This is a matter which will require expert assessment.

It is essential that the integrity of the reptile-proof fences is maintained throughout the trapping period. These should be checked on every visit, and any breaks repaired within 24 hours, otherwise reptiles could re-enter the trapping area from outside. An advantage of subdividing the trapping areas into compartments is that any breaks in the perimeter fence which do occur, and which go undetected for any length of time, will only affect the compartment it lies alongside, and not the whole trapping area.

On sites where vandalism is a significant problem, it may be necessary to institute security measures to ensure that the reptile-proof fences remain intact throughout the trapping period. The measures necessary will vary from site to site, but could include the use of 'Heras' fencing and/or the presence of site security personnel in extreme cases.

9. Daily or near-daily reptile collection visits should carry on until 10 successive nil-returns have been achieved, in suitable weather conditions, following the last vegetation cut. Following a final inspection by a suitably qualified person (the final inspection can be done at the same time as the last check of the refugia). At this point, the trapping records should be summarised and sent to the relevant Species Officer at the NRW. Although there is no obligation to do this, it will assist in maintaining a clear position with the statutory body and will encourage a cooperative dialogue. This may be useful in establishing that there has been full and reasonable compliance with the legal requirements in the event of a challenge arising.

   Note that there is no need to have 10 successive nil-returns between the vegetation cuts, but that these cuts should be at least 2 days apart and the numbers should be showing a decline (the exact time taken should be determined by the reptile handler in charge, and will vary from site to site).

10. NRW will then write to the developer to "release" the site to the developer or site engineers. Again, there is no obligation to obtain written consent from the NRW, but it will further demonstrate that there has been best-practice compliance to the satisfaction of the statutory body.

11. The area cleared of reptiles should then ideally be immediately stripped of all vegetation and the topsoil removed, leaving bare subsoil. This final stripping may be done with machinery (ideally using a bucket with

[3] Reptiles usually take a while to find refugia (hence the 'bedding in'), and once they do they tend to use them habitually. Moving refugia may simply confuse the animals and be counterproductive.

tines)[4]. In some cases it may be desirable that the site is 'destructively searched' prior to development, especially if the trapping out has not gone absolutely to plan (eg vandalism problems etc). This means that the topsoil layer to a depth of about 250mm is removed from the site in strips or sections, working sequentially across the site, using a digger with a tined bucket, under the supervision of a reptile handler who is able to check for the presence of any reptiles remaining in the soil. Where such reptiles are found, the reptile handler will stop the works, rescue the animal and release it to the receptor area.

12. The edges of the cleared area should be marked with high-visibility temporary fencing to prevent accidental trafficking of vehicles on the uncleared parts of the site (if any).

13. If there is any delay between the end of the reptile clearance operation and the commencement of development, measures must be taken to prevent the recolonisation of the site by reptiles from adjacent habitats, unless there is no such habitat adjacent to the site. To prevent reptiles re-entering the cleared area, the developer must therefore either:
    a) Keep the area in the cleared condition obtained at Step 9 - bare earth with no vegetation. To keep the area bare, the developer could consider using an approved herbicide. Or:
    b) Retain the reptile-proof fencing until development works are underway in the area concerned. If this option is chosen, the integrity of the reptile-proof fences will need to be checked regularly throughout the intervening period (ie daily or near-daily), and any breaks repaired within 24 hours. If undetected breaks occur for any length of time, the affected area (or compartment) will need to be trapped out again by repeating Steps 5-9 above.

Maintenance of the site in a cleared and reptile-proof condition is really only critical during the reptiles' active period, since recolonisation is not likely to occur during the winter months. Therefore if a site has been cleared of reptiles in summer prior to development in winter, the reptile-proof fences can be removed (or allowed to deteriorate) once the hibernation period has begun (ie after about the end of October). If the start of development is subsequently delayed beyond the end of the hibernation period, however, (ie after about the end of March) it may be necessary to reinstall the fences, or even re-trap the site.

The site can be re-opened to reptiles by removing the fencing after all construction works are complete.

Catching Methods

The use of refugia at high densities (100/ha) can be very effective for collecting slow-worms. However, other species are less readily found under refugia, and can be much more difficult to catch. 'Noosing' of common lizards whilst sunning on refugia can be effective, but requires skill and is very time-consuming. Snake catching is also a specialised skill, and carries health and safety implications. However, both snakes and common lizards tend to be more mobile than slow-worms, and are therefore more likely to reslake to the vegetation clearance and remove themselves from the trapping area where one-way fences make this possible.

Keeping Records

For trapping records, we recommend logging the date, time, weather conditions, temperature, minimum night temp (night before), species caught and location caught (a rough map would suffice, eg area A, B or C) and, if possible, the sex and age of the animals, and if gravid. Ideally a report of the trapping operation, in which all of the capture records are summarised and evaluated, should be prepared at the end of the operation and submitted to the NRW and/or the local authority ecologist. There is no obligation to do so, but the keeping of clear and unambiguous records may be essential in establishing that there was full and reasonable compliance with the law in the event of there being any challenge to the methods used.

When to Trap

Ideally clearance should begin as early as 1 April, with the aim of the site being cleared by the end of July. Clearance operations are less desirable later in the summer, since after about June there is the chance that juvenile animals will also be present, which as well as being extremely difficult to see and catch, may also significantly increase the number of animals on the site.

[4] It is worth noting that there can be a conflict on sites where there is also an archaeological watching brief: archaeologists usually specify a bladed bucket to produce smearing in which archaeological layers can be seen. A tined bucket makes this much more difficult.

Post-development Monitoring

In addition to the above, we would encourage the developer to put in place a scheme to monitor the effects of the development on the reptiles and to see if the mitigation has been successful. The design of any monitoring exercises should be discussed in advance with the NRW.

APPENDIX 6: SINC SITES BETWEEN 1 AND 2KM FROM THE SITE

- East of Ty'n-y-Pwll (purple moor grass & rush pasture; approximately 1.3km north east of the site)
- Ravenswood (reedbed & ponds; approximately 1.4km north west of the site)
- Gwern-y-Steeple (native woodland; approximately 1.5km north east of the site)
- Betty Lucas Wood (native woodland; approximately 1.5km south east of the site)
- Land South of Ty'n-y-Coed (native woodland; approximately 1.5km south west of the site)
- Coed y Cwm (native woodland; approximately 1.6km south east of the site)
- Kingsland (native woodland; approximately 1.6km north east of the site)
- Land along Nant Llancarfan (lowland fen, purple moor grass & rush pasture; approximately 1.7km south of the site)
- Land South of Blackland Farm (purple moor grass & rush pasture; approximately 1.8km south east of the site)
- North of Coed Quinnet (native woodland; approximately 1.8km south of the site)
- Brook Wood (native woodland; approximately 1.9km south east of the site)
- Coed Quinnet (native woodland; approximately 1.9km south of the site)
- Land North of Whitton Rosser Farm (native woodland; approximately 1.9km south east of the site)
- North West of Croes-y-Parc Baptist Chapel (lowland meadows; approximately 1.9km north east of the site)
- West of Warren Mill Far Park (lowland meadows; approximately 1.9km north west of the site)
- Amelia Trust Woodland Pond (pond; approximately 2km south east of the site)
- Warren Mill Farm Park (purple moor grass & rush pasture; approximately 2km north west of the site)
- West of Coed Quinnet (native woodland; approximately 2km south of the site)

PHOTOGRAPHS OF SITE (May 2018)

View of site from Maes y Ffynon

Hedgerow along western boundary

Hedgerow along northern boundary

Scrub along eastern boundary

Scrub and log pile along eastern boundary

Hedgerow along southern boundary

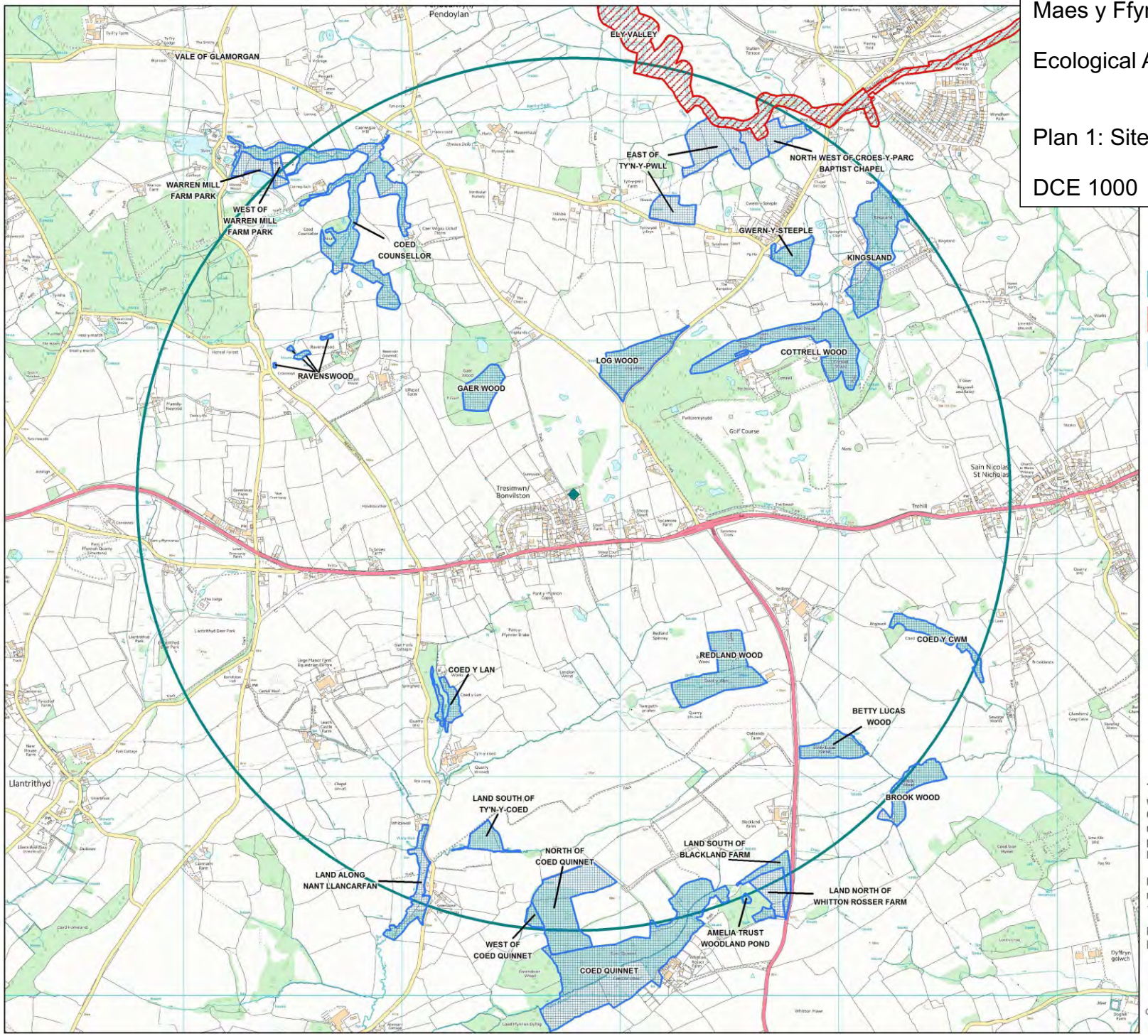
Hard-standing and site of former garages

Maes y Ffynon, Bonvilston

Ecological Assessment

Plan 1: Site Location & Context

DCE 1000 NTS October 2018



Centre of Search Area

2km Search Buffer

Site of Special Scientific Interest

Site of Importance for Nature Conservation

N

Plot produced on 26/04/2018 on behalf of David Clements Ecology Ltd by

SEWBReC

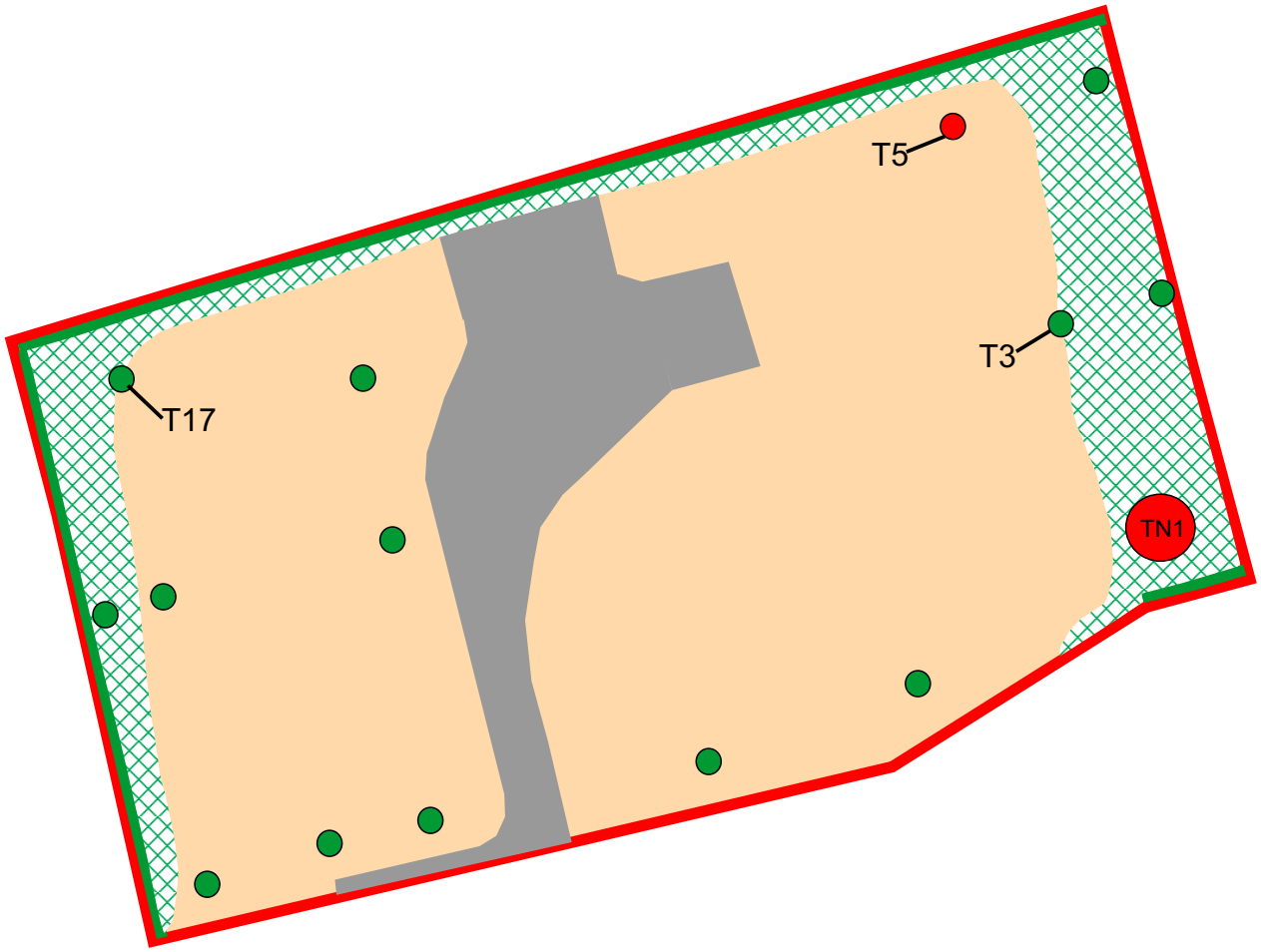
SOUTH EAST WALES BIODIVERSITY RECORDS CENTRE
CANOLFAN GOFNODION BIOAMRYWIAETH DE DDWYRAIN CYMRU

Maes y Ffynon, Bonvilston

Ecological Assessment

Plan 2: Habitats & Vegetation

DCE 1000 NTS October 2018



KEY

- Neutral semi-improved grassland
- Dense scrub and tall ruderal
- Hardstanding
- Scattered trees
- Dead tree
- TN1 — Target Note
- Hedgerow
- Site Boundary
- T3 — Tree number

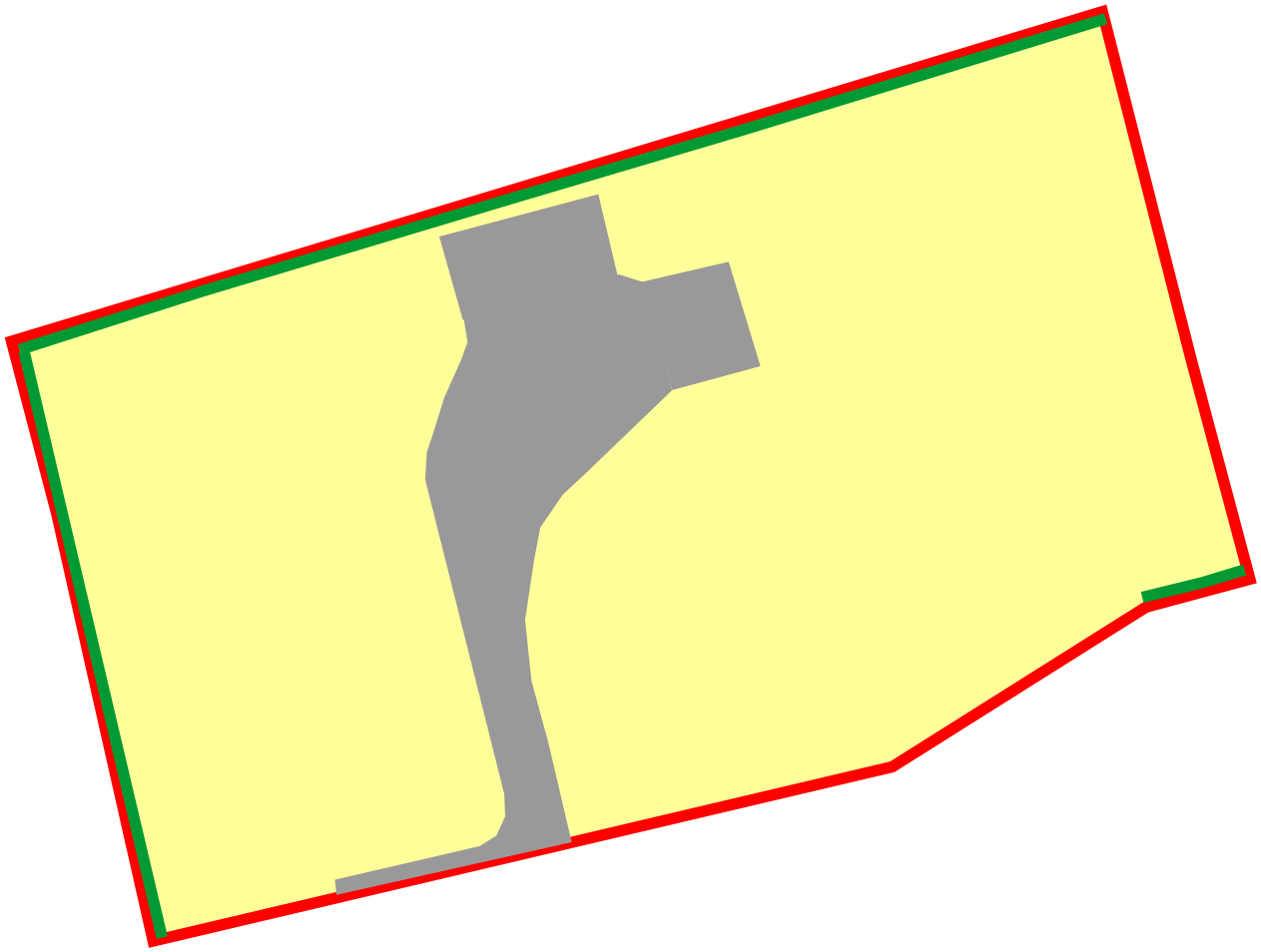
N

Maes y Ffynon, Bonvilston

Ecological Assessment

Plan 3: Site Evaluation

DCE 1000 NTS October 2018



KEY

- Local Value
- Negligible Value
- High Local Value
- Site Boundary

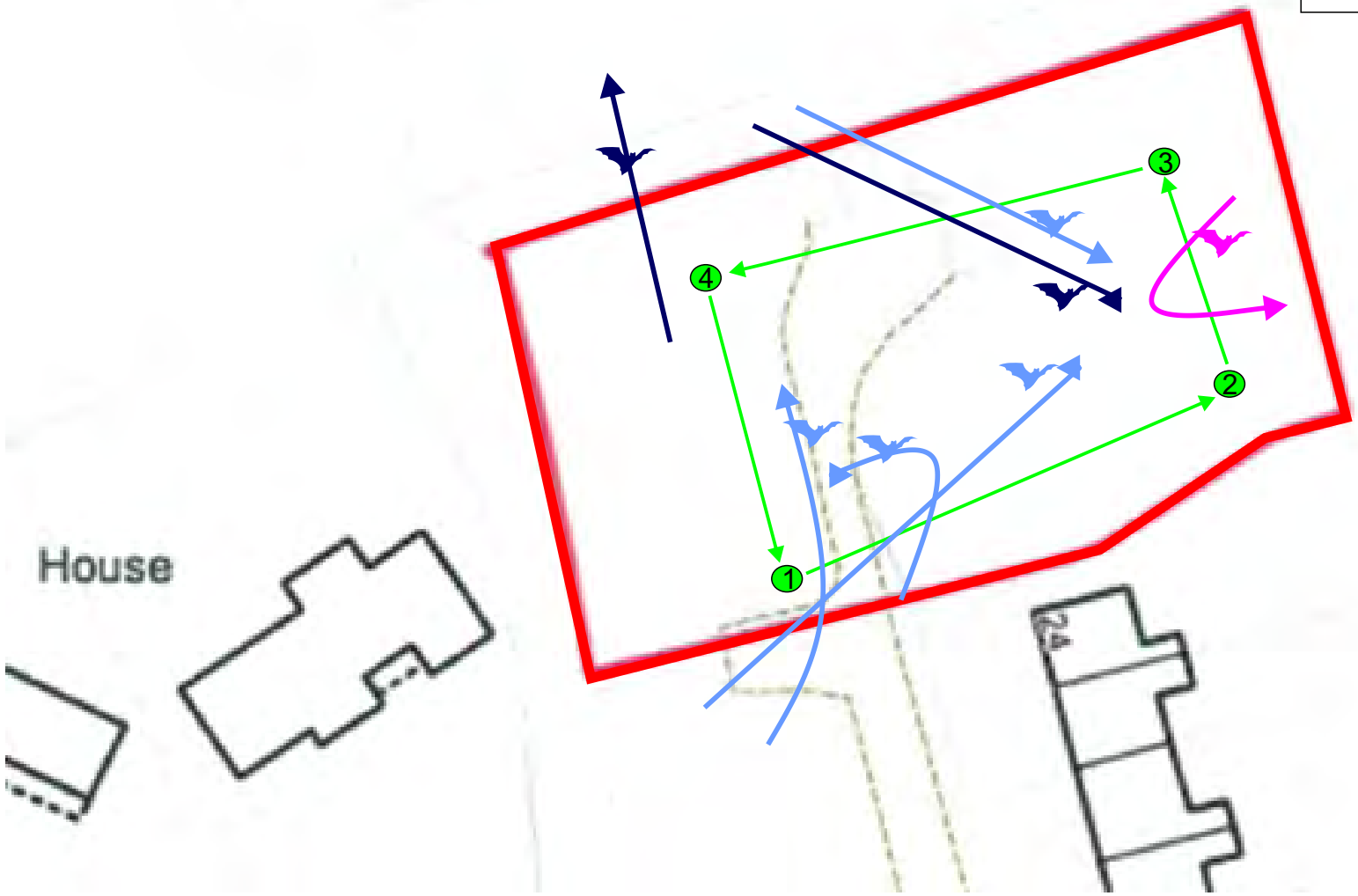
N

Maes y Ffynon, Bonvilston

Ecological Assessment

Plan 4a: Bat Transect May 2018

DCE 1000 NTS October 2018



KEY

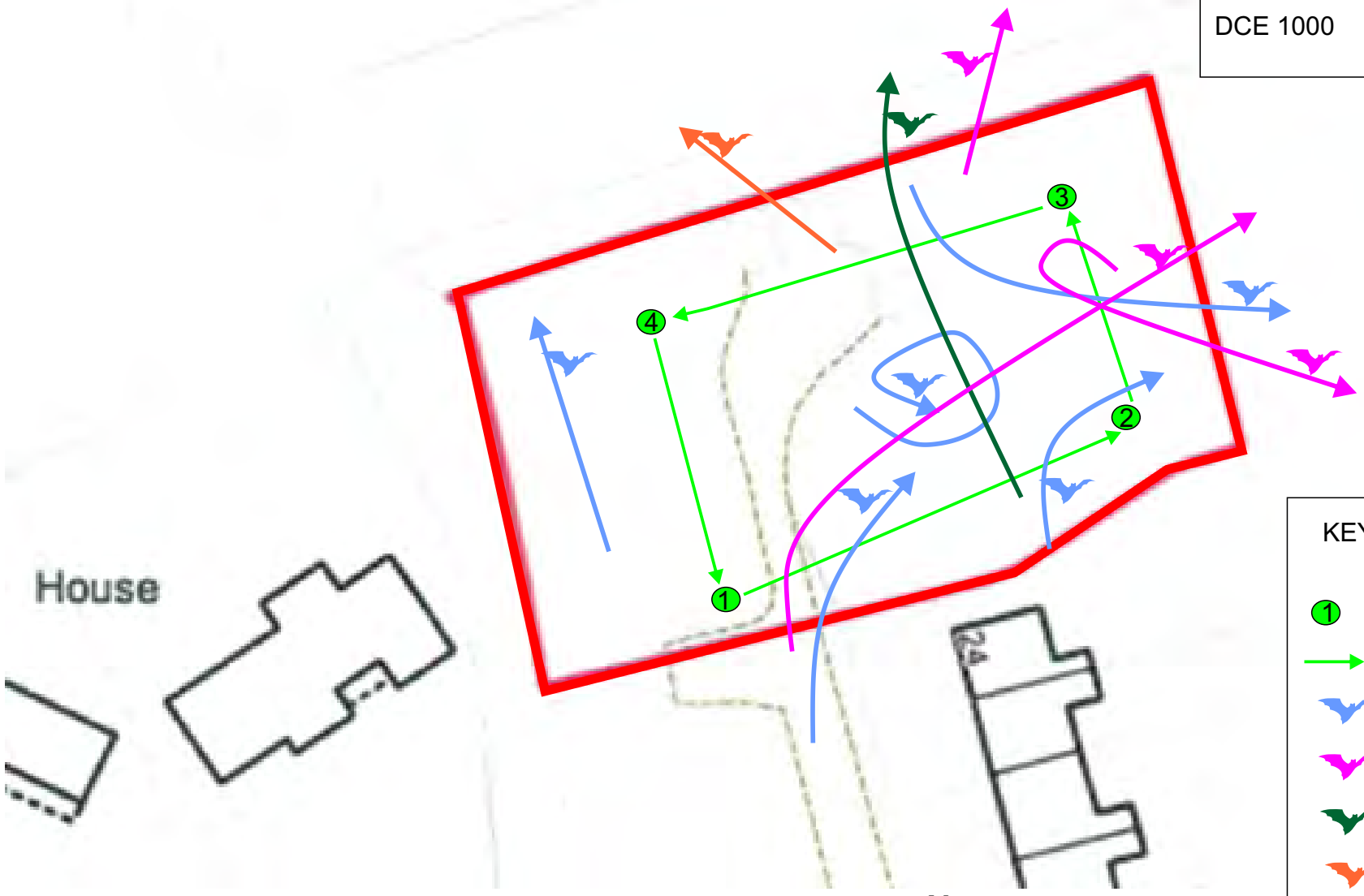
- Stopping point
- Direction of transect
- Soprano pipistrelle
- Unidentified pipistrelle
- Serotine
- Indicative flight path

Maes y Ffynon, Bonvilston

Ecological Assessment

Plan 4b: Bat Transect July 2018

DCE 1000 NTS October 2018



KEY

- Stopping point
- Direction of transect
- Soprano pipistrelle
- Unidentified pipistrelle
- Common pipistrelle
- Noctule
- Indicative flight path

Maes y Ffynon, Bonvilston

Ecological Assessment

Plan 4c: Bat Transect September 2018

DCE 1000 NTS October 2018