


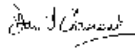

DAVID CLEMENTS ECOLOGY LTD

**CARDIFF GATE BUSINESS PARK, CARDIFF,
PLOTS 12 AND 14**

ECOLOGICAL ASSESSMENT

June 2021

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Version No./Stage	v.2.1 Final	Amendments: Roundabout information added	
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SUMMARY

This report refers to an area of land within the Cardiff Gate Business Park located on the north-eastern edge of Cardiff, in South Wales. The site, which is referred to as 'Plots 12 & 14', measures approximately 5.5ha in extent and comprises mainly bare ground and hardstanding together with some areas of scrub, grassland, hedgerow and some large brash-piles. A section of wooded watercourse bounds part of the site. Office blocks, with associated car-parking, lie immediately adjacent to the western and eastern site boundaries and an area of ancient semi-natural woodland also lies immediately adjacent to the eastern boundary of Plot 12, being separated from it by a small stream. Residential areas lie to the south, and open agricultural land lies to the north.

In the wider surroundings south of the site there are extensive residential and commercial developments which form the northern reaches of Cardiff city. To the north there is an extensive area of rural landscape, including agricultural and pasture fields delineated by hedgerows and extensive blocks of woodland. The corridor of the M4 motorway lies to the north of the site. The site is identified for business park development at some point in the future, but detailed development proposals for the site are not available at the time of writing. Indicative plans are provided at Appendix 1.

The site does not contain or lie immediately adjacent to any statutory or non-statutory sites of nature conservation interest. About 17 non-statutory SINC's lie within 2km of the site, however.

The hedgerows and scrub habitats of the site support dormouse, a European Protected Species which is known to occur in the surrounding area. These features are therefore assessed as being of District value since they form part of a larger complex of interconnected habitats which are used by this rare and declining species.

The section of watercourse (Nant Pontprennau) and the remaining areas of neutral semi-natural grassland are considered to be of High Local value for wildlife. These contain local species such as pignut and common spotted-orchid. The brash-piles, scrub, stone pile, and species poor semi improved grassland are considered to have no greater than Local value for wildlife. These habitats provide some foraging and nesting opportunities for birds and invertebrate species and are likely to be of value to small mammals, possibly including hedgehog. The areas of hardstanding and disturbed bare ground, and the stands of invasive non-native plant species, are all considered to have Negligible potential for wildlife.

Development of the site could result in the loss of all of the habitats within the site and may possibly have impacts on the peripheral (ie boundary) habitats such as the hedgerows and watercourse. The latter could include breaches for access, proximity to new structures and sources of noise and other human disturbance, and/or nocturnal illumination by artificial lights etc.

Impacts, or potential impacts, to habitats occupied by dormouse are a statutory matter, and would be subject to adequate advance survey and the implementation of mitigation measures to the satisfaction of the statutory nature conservation body, Natural Resources Wales (NRW). Any works which adversely affect these habitats, either directly or indirectly, would be subject to prior licensing by NRW. The legal constraints relating to dormouse also apply to any other habitats which may be occupied by this species, including any patches of scrub or bramble etc within the site. Clearance of any such habitats in the absence of an appropriate licence from NRW, or not otherwise in accordance with a methodology which has been agreed with NRW, could potentially constitute an offence under the Habitats Regulations 2017.

The hedgerows, trees and brash-piles of the site may also be occupied by nesting birds. These are also afforded statutory protection while in use, and therefore any clearance of such habitats must take account of the possible presence of nesting birds and be mitigated accordingly. Some of the larger trees have features which could potentially offer roosting habitats for bats, all species of which are also afforded protection under the Habitat Regulations. Adverse impacts to these, such as felling or lopping, increased levels of human disturbance and/or illumination at night etc, would be subject to additional survey to establish their actual use by bats. Where bats are found to be present appropriate mitigation and advance licensing by NRW would be required.

There could also be potential for impacts to the watercourse on site, particularly during the clearance and construction stages. The likelihood of these impacts occurring are acknowledged to be comparatively slim, but nevertheless appropriate mitigation measures would be required to prevent this from occurring. This would comprise a statutory obligation under current Environment Agency Wales (EAW) regulations, as would the retention of a suitable corridor alongside the stream for maintenance access and conservation purposes.

The loss of remnant areas of semi-natural neutral grassland would cause a local diminution of the habitat resource, including the potential loss of some uncommon plant species, unless mitigated for.

In the event that the development is artificially illuminated at night, there could be adverse impacts to wildlife as a result of light spillage into adjacent habitats, particularly any adjacent woodland, scrub or hedgerows etc. These could be sufficient to deter use of these habitats by nocturnal fauna, potentially including dormouse.

Clearance and construction operations on the site could result in the accidental spread of invasive non-native species such as Japanese knotweed, the spreading of which is prohibited under the Wildlife & Countryside Act 1982. Specialist advice and an appropriate mitigation strategy to remove and treat species these will therefore need to be agreed in advance and implemented accordingly.

In the absence of mitigation there is therefore considered to be scope for significant adverse impacts to habitats of District to High Local value for wildlife and including possible impacts to protected species such as dormouse, bats and nesting birds. Such impacts could potentially have significance in the district (ie county-borough) context. It is, however, considered likely that all such adverse impacts should be amenable to mitigation.

On this basis, and provided adequate mitigation measures are implemented to avoid or minimise impacts to the identified features of interest and protected species etc, it is considered on current evidence that the proposed development of this site would not be unacceptably constrained by biodiversity and nature conservation issues.

In-principle recommendations for the mitigation of adverse development impacts are provided.

1.0 INTRODUCTION

- 1.1 This report has been prepared by David Clements Ecology Ltd (DCE) on the instructions of the TAND Advisory Corporation Ltd and refers to an area of land within the Cardiff Gate Business Park located on the north-eastern edge of Cardiff, in South Wales. The site location and context are shown at Plan 1.
- 1.2 The site, which is referred to as ‘Plots 12 & 14’, measures approximately 5.5ha in extent and comprises mainly bare ground and hardstanding together with some areas of scrub, grassland, hedgerow and some large brash-piles. A section of wooded watercourse bounds part of the site. Office blocks, with associated car-parking, lie immediately adjacent to the western and eastern site boundaries and an area of ancient semi-natural woodland also lies immediately adjacent to the eastern boundary of Plot 12, being separated from it by a small stream. Residential areas lie to the south, and open agricultural land lies to the north. The site lies at OS grid reference ST 21161 82824, at around 58m AOD.
- 1.3 In the wider surroundings south of the site there are extensive residential and commercial developments which form the northern reaches of Cardiff city. To the north there is an extensive area of rural landscape, including agricultural and pasture fields delineated by hedgerows and extensive blocks of woodland. The corridor of the M4 motorway lies to the north of the site.
- 1.4 The site is identified for business park development at some point in the future, but detailed development proposals for the site are not available at the time of writing. Indicative plans for redevelopment are shown at Appendix 1
- 1.5 The remainder of this report sets out the results of an ecological survey and assessment of the site. It also assesses the likely impact of any future development and makes recommendations regarding the mitigation of any potentially adverse biodiversity impacts.

1.6 Designated Sites of Biodiversity Interest

Statutory Sites

- 1.6.1 The site does not contain or lie immediately adjacent to any statutory sites of nature conservation interest such as Special Areas of Conservation (SACs), Special Protection Areas (SPAs), Sites of Special Scientific Interest (SSSIs), National Nature Reserves (NNRs) or Local Nature Reserves (LNRs).

Non-Statutory Sites

- 1.6.2 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), Wildlife Trust Reserves (WTRs), Country Parks or Regionally Important Geological Site (RIGS) etc. About 17 SINCs lie within 2km of the site, however, as listed in

Appendix 2. These mainly comprise ancient semi-natural woodlands, the nearest of which lie about 400m away from the site.

- 1.6.3 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 The site was mainly surveyed on 3rd March 2020 and 1st May 2020, in good weather conditions, 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). The roundabout situated between Plots 12 and 14 was later surveyed on 9th June 2021. The habitat survey 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.
- 2.2 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.

Bats

- 2.3 Large standard trees on the site were subject to a preliminary 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 any ‘potential roosting features’ (PRFs) such as those described by Andrews (2018). 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. In addition, a search was made for obvious signs of occupation by bats including droppings, urine stains and scratching around cavity entrances etc. 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, lacking any obvious features suitable for use by bats.	No further survey required. No constraint to tree works.

Dormouse

- 2.4 The hedgerows, brash-piles and scrub habitats of the site were subject to a nest-tube survey for dormouse in accordance with the survey advice set out by Bright *et al* (2006). A total of some 60 nest tubes were deployed in suitable locations on 25th March 2020. The tubes were then checked at intervals between the months of April and September, and any evidence of dormouse was recorded. Any hazelnuts which were found on the site were also checked for evidence of handling by this species.

Reptiles

- 2.5 Surveys for common reptiles were undertaken following the advice given by Gent & Gibson (1998) and Froglife (1999). Survey of the site comprised the placing out of some 86 ‘artificial refugia’, comprising 60 x 60cm squares of roofing felt, in suitable locations to act as artificial roosting and basking sites for reptiles.
- 2.6 The refugia were placed out across the site on 25th March 2020 and were left to bed-in for approximately one week. The refugia were then checked on eight occasions at roughly one-week intervals between the 31st March 2020 and 21st April 2020. The species and numbers of any reptiles, amphibians and small mammals etc found sheltering underneath or on the refugia were recorded.
- 2.7 Where possible, any ‘natural refugia’ on the site, such as logs, stones, scrap metal etc, were also lifted to search for any reptiles or other animals.

2.8 Existing Data

- 2.8.1 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 descriptive text. Records relating to the site are mentioned in the text where relevant.
- 2.8.2 The site was also subject to an Extended Phase 1 survey by DCE for another client in 2012, at which time it was found to comprise a mixture of mainly neutral grassland and mixed scrub, mature trees, peripheral hedgerows and ruderal and ephemeral/short perennial habitats, together with some areas of bare ground and a number of small seasonal ponds. No rare or protected fauna species were recorded from the site itself, but foraging bats, dormouse, badger, otter and common reptiles were all recorded within about 0.5-1km of the site. Some of the neutral grassland on the site was deemed to be potentially of SINC quality, as were the peripheral hedgerows, although these habitats were not so designated at the time (DCE 2012a/b).

2.9 Survey Constraints

- 2.9.1 The Phase 1 habitat survey was constrained by the apparently recent clearance of most of the vegetation within the site prior to the survey. The initial survey in March was

unable to adequately identify many of the plants on the site because of this clearance, and this was therefore addressed through a subsequent survey in May.

- 2.9.2 The dormouse and reptile surveys were somewhat constrained by heavy winds during the survey period, which displaced some of the nest-tubes and refugia. This only affected a small percentage of the tubes and refugia, however, and is therefore not considered to have significantly impacted the survey results.

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 3, and representative photographs are included at the end of the report.

Notable Flora

3.1.2 There are many records of native bluebell (*Hyacinthoides non-scripta*) from the area around the site, the closest being a historical record situated approximately 30m from the site boundary. The most recent record from the site vicinity dates from 2005 and is situated 1.6km away. Bluebell has also previously been recorded in the woodland adjacent to Plot 12 and was found in the hedgerows of Plot 12 during the current survey. Bluebell is afforded partial protection under the amended Wildlife & Countryside Act 1981, being listed on Schedule 8 in connection with commercial sale or trade.

3.1.3 There are old records for two scarce plants recorded in the vicinity of the site, comprising narrow-leaved helleborine (*Cephalanthera longifolia*) and field gentian (*Gentianella campestris*) (SEWBRc Ref 0190-769), both of which are listed as conservation priorities under both the UK Biodiversity Action Plan (as UK BAP 'Priority Species') and Section 7 of the Environment Act (Wales). Neither of these species was recorded on the site during the present survey, however.

3.1.4 Several local plant species were recorded on the site, including pignut (*Conopodium majus*), tutsan (*Hypericum androsaemum*) and common spotted-orchid (*Dactylorhiza fuchsia*).

Notable Habitats

3.1.5 There are hedgerows along some of the boundaries of both Plot 12 and Plot 14. Hedgerows are listed as habitats of principal importance for conservation in Wales under Section 7 of the Environment Wales Act (2016)¹.

3.1.6 A small stream marks the easternmost boundary of Plot 12 (partially on-site) and a block of woodland occurs beyond this (immediately off-site). These habitats are also listed as habitat of conservation importance in Wales.

Invasive Non-native Plant Species

3.1.7 Several stands of Japanese knotweed (*Fallopia japonica*) are present on both plots (see Plan 2). This aggressively invasive species is regulated under Schedule 9 of the amended Wildlife & Countryside Act 1981 which prohibits its deliberate or accidental spread.

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 A species of garden cotoneaster (*Cotoneaster* sp.) was also noted on Plot 14 (see Plan 2). This was not identified to species but could potentially comprise one of those which is also listed on Schedule 9.

3.1.9 Buddleia (*Buddleja davidii*) is present on the site and field horsetail (*Equisetum arvense*), a native species, was noted growing invasively in the north-west of Plot 12. Although not regulated by law, these species can also be invasive in suitable habitats.

Scrub

3.1.10 Scrub habitats comprising young willows (*Salix* spp) and dogwood (*Cornus sanguinea*) occur in the north-western boundary of Plot 14. Another similar section of scrub also occurs in the north-east of Plot 12.

3.1.11 The remnants of cleared scrub were noted extensively elsewhere within the site, both along the boundaries and internally. This appeared to have been recently cut at the time of survey, and the brash (cut woody arisings) laid in piles throughout the site (see below). Previous survey indicated the presence of extensive stands of willows (*Salix cinerea*, *S. caprea* and *S. alba*), dogwood, common hawthorn (*Crataegus monogyna*), alder (*Alnus glutinosa*), hazel (*Corylus avellana*) and bramble (*Rubus fruticosus* agg) within the site (DCE 2012a/b).

Hedgerows

3.1.12 The site contains several sections of peripheral hedgerow, as shown on Plan 2.

3.1.13 Hedgerow H1 lies along a small section to the east of the northern boundary of Plot 14 and comprises the following species: dogwood, bramble, common hawthorn and willow. Ivy (*Hedera helix*) is also present. H1 is connected to hedge H2 by a section of continuous scrub comprising young willow and dogwood.

3.1.14 Hedgerow H2 lines a small section of the western boundary of Plot 14 is dominated by willow.

3.1.15 Hedgerow H3 forms the northernmost boundary of Plot 12 and is a formal hedgerow of box honeysuckle (*Lonicera nitida*) which appears to have been planted as part of landscaping of the wider area.

3.1.16 Hedgerow H4 runs along the western boundary of Plot 12 and connects with H3. It comprises a hedgerow with semi mature ash (*Fraxinus excelsior*) and pedunculate oak (*Quercus robur*) trees. The hedgerow is dominated by hazel, together with field maple (*Acer campestre*), hawthorn and dogwood occurring frequently. Ground flora species include native bluebell, dog's mercury (*Mercurialis perennis*), cow parsley (*Anthriscus sylvestris*) and lesser celandine (*Ficaria verna*). Bramble occurs frequently throughout the hedgerow.

3.1.17 Hedgerow H5 runs along the southernmost boundary of Plot 12 and is not connected to H4 owing to a tarmac path dissecting the hedgerow. Hazel dominates, together with semi-mature ash trees, hawthorn and occasional holly (*Ilex aquifolium*). Ground flora species include dog's mercury, primrose (*Primula vulgaris*), cleavers (*Galium aparine*),

lesser celandine, bluebell, ivy, greater stitchwort (*Stellaria holostea*), barren strawberry (*Potentilla sterilis*), cut-leaved crane's-bill (*Geranium dissectum*), herb-robert (*Geranium robertianum*) and black bryony (*Tammiss communis*). Pignut (*Conopodium majus*), a local species, is also present.

Semi-improved Neutral Grassland

- 3.1.18 A bank on the north-west boundary of Plot 14 supports neutral grassland. The bank had been cleared back to the bare earth for approximately halfway up the total height at the time of survey, with neutral grassland occupying the remaining area. The sward is dominated by barren strawberry, together with other species including frequent or abundant sweet vernal-grass (*Anthoxanthum odoratum*), bird's-foot trefoil (*Lotus corniculatus*) and the lichen *Cladonia rangiformes*, and occasional common spotted-orchid (*Dactylorhiza fuchsii*), field wood-rush (*Luzula campestris*), tutsan (*Hypericum androsaemum*), hard rush (*Juncus inflexus*), an unidentified crane's-bill (*Geranium* sp) and hawkbit (*Leontodon* sp). The sward is dominated by broadleaved vegetation and lichen, with only limited graminoid cover.
- 3.1.19 A small and isolated section of semi-improved neutral grassland is present in the easternmost corner of Plot 12, supporting red clover (*Trifolium pratense*), Yorkshire fog (*Holcus lanatus*), yarrow (*Achillea millefolium*), bird's-foot trefoil, perennial rye grass (*Lolium perenne*), cock's-foot (*Dactylis glomerata*), dandelion (*Taraxacum officinalis* agg), common ragwort (*Senecio jacobaea*) and daisy (*Bellis perennis*).
- 3.1.20 A narrow margin of grassland occurs to the east of the stream in Plot 12. This is similar to that described above but also contains wood avens (*Geum urbanum*) and ground-elder (*Aegopodium podagraria*).
- 3.1.21 A 3m wide stretch of amenity grassland borders the north-eastern and southern boundaries of Plot 14, the sward of which was close-mown to approximately 5cm tall at the time of survey. Species here include creeping buttercup (*Ranunculus repens*), perennial rye grass, ground ivy (*Glechoma hederacea*), Yorkshire fog, daisy, thyme-leaved speedwell (*Veronica serpyllifolia*), bristly oxtongue (*Helminthotheca echioides*), common mouse-ear (*Cerastium fontanum*) and a hawkweed species (*Hieracium pellucidum*).
- 3.1.22 A small, vegetated roundabout is present along Malthouse Avenue, which separates Plots 12 and 14. The roundabout supports young ash trees around the perimeter with dogwood and cotoneaster in the centre. Around the shrubs there is a band of neutral grassland of approximately 2m wide. This grassland appears relatively species-rich with species such as frequent hybrid bluebells (*Hyacinthoides x massartiana*), bee orchid (*Ophrys apifera*), common bird's-foot trefoil, field woodrush (*Luzula campestris*), perforate St Johns-wort (*Hypericum perforatum*) and fairy flax (*Linum catharticum*), together with occasional common centaury (*Centaureum erythraea*) and common spotted orchid interspersed with frequent lesser periwinkle (*Vinca minor*) and cotoneaster.

Bracken

- 3.1.23 A continuous stand of bracken (*Pteridium aquilinum*) occurs directly underneath a pylon situated in the west of Plot 14.

Bare Ground

- 3.1.24 The majority of both plots within the site comprises bare ground which appeared to have been recently cleared at the time of survey, with large machinery ruts being apparent across both plots.
- 3.1.25 Although recently cleared, the eastern and southern slopes of Plot 14 still support some regenerating vegetation, including imperforate St John's-wort (*Hypericum maculatum*), bramble, hogweed (*Heracleum sphondylium*), ribwort plantain (*Plantago lanceolata*), ground-ivy, silverweed (*Potentilla anserina*), willowherb (*Epilobium* sp), bird's-foot trefoil, cotoneaster, spear thistle (*Cirsium vulgare*), common ragwort and glaucous sedge (*Carex flacca*).
- 3.1.26 The bare ground in Plot 12 also supports some regenerating vegetation, comprising colonising species and fragments of former vegetation. These areas support species such as creeping cinquefoil (*Potentilla reptans*), hard rush, hedge mustard (*Sisymbrium officinale*), lesser swine-cress (*Coronopus didymus*), field horse-tail (*Equisetum arvense*), colt's-foot (*Tussilago farfara*), bird's-foot trefoil, common knapweed (*Centaurea nigra*), dock (*Rumex* sp) and yarrow.

Artificial Habitats

- 3.1.27 Large piles of cut small woody vegetation (brash) occur on both plots. On Plot 12, large brash piles occur across the entirety of the plot and are also piled up against the boundary hedgerows. On plot 14 some brash is piled against the westernmost hedgerow, and a very large brash pile occurs south of the pylon. A large pile of stone also is present in the west of Plot 14.

Watercourse

- 3.1.28 A ditch containing a small stream, the Nant Pontprennau, runs along the eastern boundary of Plot 12. The stream flows over a rocky bed and is bordered by steep earth banks. At the time of the survey the stream was approximately 20cm deep, but this is probably variable and may be intermittent. On the eastern (off-site) side there is semi-natural woodland immediately adjacent, whilst on the western side within the site there is a narrow margin of grassland and a tarmac path. There is limited aquatic/emergent vegetation and the grassland alongside the stream is as described above. A section where the stream is culverted has several alder trees on either side of the bank.

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’)². 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 (see WBP 2016b).
- 3.2.2 Seven known bat roosts occur within 2km of the site, the species of which are unknown except in one case of a pipistrelle species. The closest roost record, from 2001, relates to a roost of an unknown bat species situated approximately 900m from the site.
- 3.2.3 There are numerous records of bats foraging and commuting within 2km of the site. The nearest such record is of greater horseshoe bat, a rare and endangered species, approximately 470m away, with several passes recorded over several nights. The most recent activity record also pertains to foraging greater horseshoe bat situated approximately 900m away from the site. Other bat activity records in the vicinity relate to noctule, serotine, brown long-eared bat, unidentified myotid bats and three species of pipistrelle, all occurring within 2km of the site (SEWBRc Ref 0190-769). It is likely that at least some of these species also forage over the site, at least on occasion, especially the pipistrelle species. Previous survey work undertaken by DCE in 2016 of the nearby SSE area recorded noctule, brown long eared bat, serotine, Nathusius’ pipistrelle, common and soprano pipistrelle and Myotis species.
- 3.2.4 The larger trees of the site were assessed for their potential to support roosting bats. The majority of the trees were assessed as being of Category 3 (‘negligible’) potential, but there were also a few with greater potential, as shown in Table 1. These trees mostly occur within the hedgerows of Plot 12 and are indicated on Plan 2.

Table 1: Results of Ground-based Visual Assessment of Trees within the Site.

Tree No.	Species	PRF	Category
1	Ash	No visible features but of an age/size that could support features suitable for bats	2B
2	Hawthorn	Wounds present on the eastern aspect of stem	2A
3	Ash	No visible features but of an age/size that could support features suitable for bats	2B
4	Oak	No visible features but of an age/size that could support features suitable for bats	2B

² The European legislation cited herewith is that which was applicable at the time of survey, but it should be noted that new arrangements have become applicable after 31 Jan 2020 as a result of ‘Brexit’. At the time of writing these comprise a continuance of the current legal and protection arrangements by means of Statutory Instrument No. 579 (*The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations*, 2019) but the longer term arrangements which will apply after the end of the Brexit ‘Transition Period’ are still to be confirmed and may differ in detail from those which previously applied.

5	Ash	No visible features but of an age/size that could support features suitable for bats	2B
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Dormouse

- 3.2.5 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 in Wales.
- 3.2.6 There are about 25 records of dormouse from within 2km of the site, the nearest being a 2018 record for hazelnut shells which were opened by dormouse approximately 800m away. A female dormouse with five young was found in a nest-tube in hedge habitat in 2018 about 1.2km away from the site (SEWBRc Ref 0190-769). These records indicate that dormouse is reasonably well-established in the vicinity of the site.
- 3.2.7 The present assessment included a nest-tube survey of the hedges and brash-piles of the site, the results of which are shown in Table 2 below. The survey indicated the presence of dormouse in both plots, at the locations indicated on Plan 3.

Table 2: Dormouse Nest-tube Survey Results

Date	Results
16 th April 2020	3x Dormouse-handled hazelnuts found near south-west boundary of Plot 12. No dormouse or nests present in tubes.
1 st May 2020	One female dormouse torpid in nest-tube on Plot 14.
26 th June 2020	One female dormouse active (with half a tail) to the south of Plot 12. One dormouse nest along the northern boundary of Plot 12.
28 th July 2020	One dormouse inside nest halfway down western most hedgerow of Plot 12
28 th August 2020	No dormouse in tubes. Nests still present as per previous month
22 nd September 2020	3 x dormouse in tubes. 1 in nest to the south of eastern boundary of Plot 12, 1 in nest approx. halfway along northern boundary of Plot 14 and one escaped along the southern boundary of Plot 12.

Otter & Water Vole

- 3.2.8 Otter is also a ‘European protected species’ afforded legal protection which is similar to that of bats (see above), whilst water vole is afforded full protection under the amended Wildlife & Countryside Act 1981. Both species are ‘Section 7’ listed conservation priorities in Wales.
- 3.2.9 Otter is present on 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.
- 3.2.10 There are several records of otter within 2km of the site, the nearest being from 2003 and relates to the finding of two old otter spraints on a rock approximately 700m from

the site. The most recent record describes a deceased animal found on a road in 2016 approximately 1.9km away from the site. (SEWBRc Ref 0190-769). There are no records of water vole in the vicinity of the site.

- 3.2.11 The Nant Pontprennau stream runs along the eastern boundary of Plot 12 and joins a larger stream at its southernmost extent. This adjoining stream runs east through the priority area of ancient semi natural woodland that lies immediately adjacent to the eastern boundary of Plot 12 and then south into the residential area off-site. The river Rhymney (SINC) is situated approximately 1.5km from the site and is known to support otter.
- 3.2.12 Despite the presence of the watercourse, it is considered unlikely that otter would occur either within the site or in the adjacent woodland. The stream has been extensively culverted and is very shallow in nature. Certainly, the section near the site is assessed as having low potential to support otter. Given the complete lack of local records and the rocky and unvegetated nature of the stream, it is also considered very unlikely to support water vole.

Badger

- 3.2.13 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.
- 3.2.14 There are many records for badger in the vicinity of the site. The closest record, which dates from 2014, describes badger guard hairs discovered on barbed wire approximately 450m from the site, whilst the most recent record is dated 2017 and relates to a deceased animal found on a road approximately 500m away from the site (SEWBRc Ref 0190-769).
- 3.2.15 During the August dormouse survey badger dung was observed along the top of the bund of Plot 14. The 2012 survey found no signs of this species, although the habitats at that time were assessed as having some potential to support badger (DCE 2012a/b). The woodland adjacent to Plot 12 has the potential to provide suitable habitats for shelter, breeding and foraging by badger although it has not been recorded there to date. Badger likely utilise the site on occasion for commuting and foraging.

Other Mammals

- 3.2.16 A small number of records for brown hare were returned in the data trawl, the closest of which relates to a 2005 record of a deceased individual approximately 510m away from the site. The most recent record is from 2008, although no information has been provided (SEWBRc Ref 0190-769). The site itself is largely unsuitable for brown hare, but this species is quite likely to occur in the surrounding agricultural lands to the north.

- 3.2.17 There are about 20 records of hedgehog within 2km of the site, the closest of which is a 2015 record of a live individual situated approximately 470m away. The most recent record is from 2017 for a live individual sighted approximately 780m from the site (SEWBRc Ref 0190-769). The areas of scrub, hedgerows and brash piles within the site could potentially offer nesting and foraging potential for this declining species, which is 'Section 7' listed in Wales and which could potentially occur on site, at least on occasion.
- 3.2.18 There is a single record of yellow-necked mouse in 2017 situated 1.5km from the site, and a single record of harvest mouse in 2008 approximately 1.8km from the site (SEWBRc Ref 0190-769). Neither of these 'Section 7' listed species is considered likely to occur within the site, however, although yellow necked mouse could potentially be present in the adjacent woodland habitats immediately off site.
- 3.2.19 Rabbits were sighted on occasion during visits to the site, and several rabbit burrows were noted along the northern site boundary as well as in other areas. It is likely that a range of other common mammal species occur, including 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 as fox.

Birds

- 3.2.20 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.
- 3.2.21 There are numerous records of rare, scarce and local bird species within 2km of the site. For example, species listed on Schedule 1 include woodlark and merlin, both recorded 0.7km from the site in 2001. There is also a 2018 record for kingfisher approximately 1.6km from the site. Other such records include osprey, greenshank, barn owl, firecrest, brambling, black redstart, hobby, redwing, and fieldfare (SEWBRc Ref 0190-769). None of these species would be expected to occur on the site, other than perhaps as a casual occurrence while flying over or on passage.
- 3.2.22 Species of conservation concern which are listed under 'Section 7' in Wales include bullfinch, cuckoo, tree pipit, house sparrow, kestrel, skylark, dunnock, starling, yellowhammer, grasshopper warbler, marsh tit, song thrush and spotted flycatcher (SEWBRc Ref 0190-769). The hedgerows, scrub and brash-piles of the site could potentially be used by some of these species for nesting, such as dunnock, starling or song thrush for example. Surveys undertaken by DCE in 2016 of the nearby SSE area recorded barn owl and kestrel.
- 3.2.23 Several common species of bird were observed during the present surveys, comprising magpie, blackcap, blue tit, wood pigeon and robin. Other species observed flying over the site included buzzard and various species of gull. The surveys carried out in 2012 recorded additional species such as goldfinch, long-tailed tit, greater spotted woodpecker, green woodpecker, wood pigeon and wood warbler (DCE 2012a/b), some of which may still occur although the habitats of the site are now in a much degraded condition.

Reptiles

- 3.2.24 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.
- 3.2.25 No previous records of reptiles exist from within the site itself, but there are several records from within 2km of the site. The closest of these is situated approximately 750m away and pertains to a slow-worm record from 2005. The most recent record relates to a 2014 sighting of common lizard. There is also a single record for grass snake from 2005 situated approximately 1.3km from the site. (SEWBRc Ref 0190-769). No reptiles were recorded during the surveys carried out in 2012 (DCE 2012a/b).
- 3.2.26 The results of refugia survey carried out for the present surveys are shown at Table 3 below. No reptiles were recorded by the present survey.

Table 3: Results of Reptile Refugia Survey 2020

<i>Life-stage/ Sex</i>	<i>31st March</i>	<i>2nd April</i>	<i>6th April</i>	<i>9th April</i>	<i>14th April</i>	<i>16th April</i>	<i>21th April</i>	<i>23rd April</i>
<i>Adult</i>	-	-	-	-	-	-	-	-
<i>Juvenile</i>	-	-	-	-	-	-	-	-
<i>Total</i>	-	-	-	-	-	-	-	-
<i>Start time of survey</i>	13:00	11:10	14:20	10:30	15:30	09:20	11:05	10:25
<i>Weather and temp</i>	10°C Dry Clear Light wind	11°C Dry Partly cloudy Light wind	14°C Dry Clear Light wind	14°C Dry Clear Light wind	14°C Dry Clear Light wind	14°C Dry Partly cloudy Calm	14°C Dry Clear Light wind	14°C Dry Clear Light wind
<i>Key</i>								

Amphibians

- 3.2.27 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 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 is listed as a ‘Section 7 species’ in Wales.
- 3.2.28 There are records of common frog and common toad from within 2km of the site, the closest being a 2014 record of common frog located approximately 390m from the site.

The closest record for common toad occurs approximately 530m from the site. (SEWBRc Ref 0190-769). There are also several records for both palmate newt and smooth newt, all of which were recorded in 2014. The closest record for palmate newt is approximately 390m away, and the closest for smooth newt is located 530m away from the site. The most recent amphibian record pertains to a 2018 common toad record, situated approximately 1.6km from the site (SEWBRc Ref 0190-769). There are no records of the rare and specially protected great crested newt within 2km of the site. No amphibians were recorded by the 2012 surveys (DCE 2012a/b) and none were found during the refugia survey for reptiles (see above).

- 3.2.29 There are no waterbodies on the site which appear suitable for use by breeding amphibians. The seasonal ponds which were recorded in 2012 no longer exist and in any case may have been likely to dry out too rapidly in the spring for amphibians to complete their life cycle. The section of the Nant Pontprennau which runs alongside the site also appear unsuitable for breeding use. There are several waterbodies within 1km of the site, however, and it is therefore possible that common amphibians such as frog, toad and/or palmate newt may occur in sheltered habitats such as the hedgerows at least on occasion whilst foraging, commuting or hibernating in winter. The probability of great crested newt occurring is assessed as negligible.

Fish

- 3.2.30 There are several records of fish recorded near the site. These include old records of European eel and brown trout, both declining 'Section 7' species of conservation concern in Wales, from within the site boundary. Other more recent records include sightings of bullhead, also a local species, some 760m away from the site in 2005 (SEWBRc Ref 0190-769). It is possible that some of these species, as well as other commoner fish such as rudd or three-spined stickleback, may occur in the section of the Nant Pontprennau alongside the site, at least on occasion.

Invertebrates

- 3.2.31 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.
- 3.2.32 A wide range of invertebrates have been recorded from within 2km of the site, including several rare, declining and/or 'Section 7' listed species. There are many records of moths especially, including cinnabar (*Tyria jacobaeae*), mouse moth (*Amphipyra tragopoginis*), flounced chestnut (*Agrochola helvola*), brindled beauty (*Lycia hirtaria*), dusky thorn (*Ennomos fuscantaria*), small phoenix (*Ecliptopera silaceata*), centre-barred sallow (*Atethmia centrigo*), feathered gothic (*Tholera decimalis*) and ghost swift (*Hepialus humuli*), amongst others. Several of these could potentially occur on the site. White-letter hairstreak butterfly (*Satyrion w-album*), a local and declining species, was recorded in 2006 and 2009 within 1.7km but is unlikely to occur on the site itself (SEWBRc Ref 0190-769).

- 3.2.33 Other invertebrate records from the site vicinity include various bumblebees (*Bombus* spp) and slender ground-hopper (*Tetrix subulata*), a local species recorded approximately 300m away from the site. Uncommon species include black darter (*Sympetrum danae*) and migrant hawker (*Aeshna mixta*) dragonflies, scarce blue-tailed (*Ischnura pumilio*) and beautiful demoiselle (*Calopteryx virgo*) damselflies, and long-winged conehead cricket (*Conocephalus discolor*) (SEWBReC Ref 0190-769).
- 3.2.34 The 2012 surveys of the site itself recorded species such as meadow brown (*Maniola jurtina*), common blue (*Polyommatus icarus*), small tortoiseshell (*Aglais urticae*), speckled wood (*Pararge aegeria*) and small heath (*Coenonymphus pamphilus*) butterflies, the latter a local and declining 'Section 7' listed species (DCE 2012a/b).
- 3.2.35 Invertebrates recorded during the present surveys included orange-tip (*Anthocharis cardamines*), peacock (*Inachis io*), comma (*Polygonia c-album*), brimstone (*Gonepteryx rhamni*), red admiral (*Vanessa atalanta*), holly blue (*Celastrina argiolus*), and small white (*Pieris rapae*) butterflies, and one of the swallow prominent moths (*Pheosia* sp).
- 3.2.36 It is likely that the site supports quite a wide range of common invertebrates, but the range of species (and the number of any uncommon or declining species) is likely to have been significantly reduced by the recent clearance of vegetation.

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 SINC's) 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 3. The ecological assessment of the site is shown at Plan 5.

International, National & County Value

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

District Value

4.4 The hedgerows and scrub habitats of the site support dormouse, a European Protected Species which is known to occur in the surrounding area. These features are therefore assessed as being of District value since they form part of a larger complex of interconnected habitats which are used by this rare and declining species.

High Local Value

4.5 The section of watercourse (Nant Pontprennau) and the remaining areas of neutral semi-natural grassland are considered to be of High Local value for wildlife. These contain local species such as pignut and common spotted-orchid.

Local Value

4.6 The brash-piles, scrub, stone pile, and species poor semi improved grassland are considered to have no greater than Local value for wildlife. These habitats provide some foraging and nesting opportunities for birds and invertebrate species, and are likely to be of value to small mammals, possibly including hedgehog.

Negligible Value

4.7 The areas of hardstanding and disturbed bare ground, and the stands of invasive non-native plant species, are all considered to have Negligible potential for wildlife.

5.0 ASSESSMENT OF DEVELOPMENT IMPACTS

- 5.1 Full details of the proposed development of the site are unknown at the time of writing, however indicative plans are provided at Appendix 1.
- 5.2 The present survey has identified the hedgerows, scrub remnants, neutral grassland remnants and boundary watercourse as comprising the key habitats of the site. The hedgerows and scrub have been found to support dormouse, a European Protected species, and all of these habitats otherwise offer habitats suited to a range of plant and fauna species which are of conservation concern. The other habitats of the site, chiefly comprising artificial habitats such as brash-piles and a stone pile, are also likely to have at least some value for wildlife. Only the disturbed bare ground, hardstandings and stands of non-native invasive plant species are considered to have negligible wildlife value.
- 5.3 Development of the site could result in the loss of all of the habitats within the site and may possibly have impacts on the peripheral (ie boundary) habitats such as the hedgerows and watercourse. The latter could include breaches for access, proximity to new structures and sources of noise and other human disturbance, and/or nocturnal illumination by artificial lights etc. Breaches of hedgerow and associated habitats for access are considered at two separate locations in DCE (2020) access areas ecological assessment report.
- 5.4 Impacts, or potential impacts, to habitats occupied by dormouse are a statutory matter, and would be subject to adequate advance survey and the implementation of mitigation measures to the satisfaction of the statutory nature conservation body, Natural Resources Wales (NRW). Any works which adversely affect these habitats, either directly or indirectly, would be subject to prior licensing by NRW.
- 5.5 The legal constraints relating to dormouse also apply to any other habitats which may be occupied by this species, including any patches of scrub or bramble etc within the site. Clearance of any such habitats in the absence of an appropriate licence from NRW, or not otherwise in accordance with a methodology which has been agreed with NRW, could potentially constitute an offence under the Habitats Regulations 2017.
- 5.6 The hedgerows, trees and brash-piles of the site may also be occupied by nesting birds. These are also afforded statutory protection while in use, and therefore any clearance of such habitats must take account of the possible presence of nesting birds and be mitigated accordingly.
- 5.7 Some of the larger trees have features which could potentially offer roosting habitats for bats, all species of which are also afforded protection under the Habitat Regulations. Adverse impacts to these, such as felling or lopping, increased levels of human disturbance and/or illumination at night etc, would be subject to additional survey to establish their actual use by bats. Where bats are found to be present appropriate mitigation and advance licensing by NRW would be required.
- 5.8 There could also be potential for impacts to the watercourse on site, particularly during the clearance and construction stages. These could potentially include the release of

sediments and accidental spillages of pollutants (eg of oil and diesel), resulting in direct pollution. Both sedimentation and pollution, should they occur, would have an adverse effect on water quality in the watercourse, with knock-on impacts for the general ecology of the river and the species it supports both locally and downstream. The likelihood of these impacts occurring are acknowledged to be comparatively slim, but nevertheless appropriate mitigation measures would be required to prevent this from occurring. This would comprise a statutory obligation under current Environment Agency Wales (EAW) regulations, as would the retention of a suitable corridor alongside the stream for maintenance access and conservation purposes.

- 5.9 The loss of remnant areas of semi-natural neutral grassland would cause a local diminution of the habitat resource, including the potential loss of some uncommon plant species, unless mitigated for.
- 5.10 In the event that the development is artificially illuminated at night, there could be adverse impacts to wildlife as a result of light spillage into adjacent habitats, particularly any adjacent woodland, scrub or hedgerows etc. These could be sufficient to deter use of these habitats by nocturnal fauna, potentially including dormouse.
- 5.11 Clearance and construction operations on the site could result in the accidental spread of invasive non-native species such as Japanese knotweed, the spreading of which is prohibited under the Wildlife & Countryside Act 1982. Specialist advice and an appropriate mitigation strategy to remove and treat species these will therefore need to be agreed in advance and implemented accordingly.
- 5.12 In the absence of mitigation there is therefore considered to be scope for significant adverse impacts to habitats of District to High Local value for wildlife, and including possible impacts to protected species such as dormouse, bats and nesting birds. Such impacts could potentially have significance in the district (ie county-borough) context. It is, however, considered likely that all such adverse impacts should be amenable to mitigation.
- 5.13 On this basis, and provided adequate mitigation measures are implemented to avoid or minimise impacts to the identified features of interest and protected species etc, it is considered on current evidence that the proposed development of this site would not be unacceptably constrained by biodiversity and nature conservation issues.

6.0 RECOMMENDATIONS

6.1 Further Survey

6.1.1 Further survey may be required if any of the larger trees identified as having potential to support roosting bats which will be impacted by the proposals.

6.2 Statutory Obligations

6.2.1 Any development work which would potentially affect dormouse (and also possibly bats) or the habitats which they occupy, whether directly or indirectly, must take place under a derogation license issued in advance by NRW in accordance with the requirements of the Habitats Regulations 2017.

6.2.2 The derogation licence would include a detailed method statement setting out the methodology and timing etc of the works necessary to fulfil the terms of the licence, and to avoid death/injury to any dormouse (or bats) at any stage during the site's clearance, construction or subsequent operation. The method statement is likely to include a requirement to formulate and implement an on-going strategy for long-term site management to conserve and maintain any features used by these species.

6.2.3 The following are also mandatory requirements under current legislation:

1. In the event that any specially protected species, such as bats or dormouse, 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 of the site must not result in the accidental or deliberate spread of any plant species which are listed on Schedule 9 of the amended Wildlife & Countryside Act 1981, which in this case would include Japanese knotweed, and possibly also cotoneaster, which are both established on the site. A detailed method statement should be prepared in consultation with the local planning authority ecologist prior to site clearance and implemented accordingly.
4. If evidence of occupation by any other protected species, such as badger, otter or common reptiles for example, is found at any time on the site, further advice should be sought before any works are undertaken which might cause impact to these protected species.

6.2.4 In 1-2 above, the 'immediate area' should include any occupied tree/shrub 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 (e.g. 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.

Dormouse

- 6.2.5 The peripheral hedgerows and scrub habitats should be retained within the development, within a buffer corridor of an appropriate width (min 7m). Gaps in the boundary hedges should be filled using native woody shrubs, especially hazel and hawthorn, and new hedges should be created along any new or existing boundaries which do not currently support hedgerows. Links with hedges and woodland off-site should be maintained and enhanced.
- 6.2.6 New plantings of indigenous native trees and shrubs should be included in the site landscaping and should have canopy contact with the surrounding hedges wherever possible. Suitable planting species are indicated at Appendix 5. Hedgerows should be subject only to intermittent trimming in the winter months, only where essential, and in accordance with a long-term management plan.
- 6.2.7 Boundary hedges must not be illuminated at night. Any light spillage onto hedgerows from the development must be no greater than 0.2 lux. The lighting scheme for the site should be in accordance with the guidance provided by the Bat Conservation Trust (see BCT 2018)³.

Bats

- 6.2.8 Tree 2 (see Plan 2) should be subject to further internal inspection with the use of an endoscope by a licensed bat ecologist, prior to any tree works/felling, due to the presence of several features of interest which may provide bat roosting potential. A climbing survey will likely be needed to access the features of interest.
- 6.2.9 It is recommended any works to trees with lower bat potential are undertaken under the advice and guidance of an ecologist.
- 6.2.10 The hedgerows, stream and woodland immediately adjacent to the site are likely used by foraging and commuting bats. These features should not be illuminated at night (see advice under dormouse, above).

Nesting birds

- 6.2.11 Clearance works affecting the above-ground parts of trees and shrubs 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.

³ <https://www.bats.org.uk/our-work/buildings-planning-and-development/lighting>

- 6.2.12 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 (e.g. 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.

Badger

- 6.2.13 It is recommended that before any site clearance takes place, a pre-works check of the areas of scrub and hedgerows for active badger setts is carried out by a suitably experienced ecologist to ensure that setts of this protected species are not adversely affected.

Common Reptiles

- 6.2.14 No reptiles were found on the site during the present surveys, but it remains possible that low numbers of reptiles could occur on the site. Any habitats which appear suitable for reptiles which will be impacted by the development should be subject to a precautionary approach prior to clearance. This could include staged vegetation clearance in the autumn months for any above ground scrub, hedgerows or brash piles, and removal of any root balls and ground works during the following spring months, avoiding ground works during the winter period (November – February) when reptiles are in torpor and unable to rouse themselves.

Invasive Non-Native Species

- 6.2.15 Japanese knotweed is present on the site, a vigorously growing invasive non-native species. The Wildlife and Countryside Act 1981 specifically prohibits its reckless or deliberate spread. A cotoneaster species is also present on the site and may be one of the species also listed on Schedule 9.
- 6.2.16 A method statement should be drawn up in relation to these species to ensure that they are eradicated from the site and not allowed to spread beyond it. The method statement should be agreed in advance with the LPA ecologist and implemented accordingly by specialist contractors.

Habitats

- 6.2.17 EAW regulations must be followed in relation to the watercourse on the site, including its retention in an open condition within a maintenance/buffer corridor of at least 7m width (preferably 10m) from the top edge of the bank. This buffer should comprise semi-natural habitat such as native wildflower grassland subject to a conservation mowing regime.
- 6.2.18 Appropriate pollution control measures must be employed to ensure that detrimental impacts to the stream are avoided during construction. Works compounds should not be sited near to the stream, and contingency measures for unforeseen incidents such as spillages should be set in place prior to commencement of construction works.

6.2.19 Consideration should be given to restoring culverted sections of the stream to open watercourse managed for wildlife conservation.

6.3 Other Recommendations

6.3.1 Careful consideration must 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, dormouse, nesting birds and nocturnal invertebrates. Any lighting of the site at night should be carefully reviewed in liaison with an ecologist and follow the guidance provided by BCT (2018).

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

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

6.3.4 Any trees which must be removed as part of the development 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 4 for example species).

6.3.5 It is recommended that the new landscaping incorporates 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 5 for example species). The inclusion of new habitat features which will be of benefit to wildlife, such as ponds, wetlands and/or native semi-natural/wildflower grasslands, should be considered wherever possible, particularly in areas of the site which will not be subject to high levels of human use or disturbance.

6.3.6 If the small roundabout between Plots 12 and 14 is to be lost or reconfigured, consideration should be given to collecting and conserving the topsoil from the species-rich central grassland area for respreading in a suitable location elsewhere within the landscaping scheme.

6.3.7 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 scrub / scattered tree clearance works (if appropriate), should be warned of the possible presence of bats, nesting birds, common reptiles, etc 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.

6.3.8 Consideration should be given to the erection of bat roosting boxes in suitable locations around the site as well as bird nesting boxes – these could be erected on trees within the

site or rendered into the exterior walls of new buildings. 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 6.

- 6.3.9 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'.
- 6.3.10 The services of an appropriately qualified 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: INDICATIVE SITE LAYOUT



APPENDIX 2: SITES OF IMPORTANCE FOR NATURE CONSERVATION WITHIN 2KM

Malthouse Wood SINC, 380m to the north-west: Two small blocks of ancient semi-natural alder and ash with oak woodland, formerly continuous on undulating low-lying ground. The woodlands support a diverse range of species indicative of ancient semi-natural woodland, and there is a stream to the north of the smaller block of woodland and two within the larger.

Pontprennau Wood SINC, 440m south: An area of Alder/Birch woodland with varied ground flora indicative of ancient semi-natural woodlands, containing a diverse range of ancient semi-natural woodland species. The Nant Pontprennau and its associated wetland habitats runs through the site, with the wet areas of the woodland supporting marshy plant species.

St Julians Forge Fields SINC, 690m east: Two elongated fields, the northern field supporting horse-grazed semi improved neutral grassland, and the southern supporting patchy semi improved neutral grassland. Priority habitats including lowland meadow and open mosaic habitats, and various protected and priority species, such as starling and bullfinch, are recorded within this site.

Nant-y-Draenog SINC, 820m west: An unimproved tributary with diverse bankside vegetation to the north of the Pontprennau housing estates and St Mellons Road. It has been designated a SINC as a small watercourse which is comparatively unmodified, supports good aquatic, emergent or bankside plant communities, and where the water is not grossly polluted by long-term sources.

Nant Glandulais SINC, 870m west: An unimproved tributary with diverse bankside vegetation with Monk's-hood (*Aconitum napellus*) present along banks, with the stream surrounded by trees throughout. The Nant Glandulais SINC is also designated for its fish features with Eel and Trout recorded.

Coed-y-Llan SINC, 990m north-west: A small area of woodland in the north east of Cardiff, adjacent to the east-bound carriageway of the M4. The site is connected to the wider landscape and other small woodlands by a network of hedgerows, and this connectivity allows Coed-y-Llan to support dormouse, which are its primary reason for designation.

Cefn Mably Woods SINC, 1km north: A coniferous plantation with some areas of broadleaved plantation, remnant ancient woodland and areas of scrub and rides; and springs to the east of the site form a small stream which drains into the Nant Fawr in Caerphilly. The site supports a high diversity of plants and is good for invertebrates and birds.

River Rhymney SINC, 1.3km east: One of the three main rivers in Cardiff, the river is important for migratory fish, otter, wildfowl and bankside vegetation and acts as a major wildlife corridor. Many priority and protected species have been recorded within this SINC.

Nant Fawr, South of Rudry SINC, 1.5km north-east: A series of old woodlands linked by wooded stream corridors and containing an assemblage of semi-natural woodland indicator species. Presence of various priority and protected species, including dormouse and white-clawed crayfish, are qualifying SINC features.

Nant Ty-draw SINC, 1.5km north-west: An unimproved tributary with diverse bankside vegetation, designated a SINC as a small watercourse which is comparatively unmodified, supports good aquatic, emergent or bankside plant communities, and where the water is not grossly polluted by long-term sources. Along its course the stream passes a number of pond where various amphibians, including common toad (priority species), have been recorded.

River Rhymney SINC, 1.5km east: This SINC comprises the full length of the River Ebbw within the county borough and adjacent semi-natural habitats. Qualifying features include resident population of various fish and the watercourse being used as a regular migratory route by anadromous species; as well as probable use of for breeding, territory and foraging by otter.

Coedcefnporth, Cefn Mably SINC, 1.6km north-west: Damp woodland with varied canopy, undergrowth and ground flora, with the ground flora including several semi-natural woodland indicator species. A small stream flows along the site boundary.

Craig-Llwyn Road Wood SINC, 1.7km north-west: Semi-natural Oak/Alder damp woodland on the banks of the Nant-y-Felin. The site supports Monk's-hood and a varied fungi flora, with a varied ground flora indicative of ancient

semi-natural woodland, and also supports various priority and protected species, including dormouse and hawkweed species (*Hieracium*).

Nant Mwan Wood SINC, 1.8km east: A small area of woodland designated as a SINC due to its importance for dormouse. Priority habitat is lowland mixed deciduous woodland.

Lower Rookery Wood SINC, 1.8km south: Lower Rookery Wood is one of a series of small woodlands separated by amenity grassland and housing. Species indicative of ancient semi-natural woodlands have been recorded and numerous bird species.

Coetgae-sych SINC, 2km west: Made up of two connected woodland blocks and situated close to the open countryside, there is strong connectivity with woodland in adjacent gardens and a network of hedgerows. Priority habitats within the site are lowland mixed deciduous woodland, lowland beech, and yew plantation.

Druidstone Road SINC, 2km east: Mainly ungrazed fields supporting a sward of semi-improved neutral grassland, bordered on most of its sides by dense scrub woodland. It includes a moderate diversity of plant species, and these include several usually associated with damp conditions.

APPENDIX 3: SPECIES RECORDED

All species recorded by DCE 2020, unless otherwise indicated

Scientific Name	Common Name	South Wales Criteria							
		C S	W	NG	C G	AG	MG	PI L	
<i>Acer campestre</i>	field maple		W						
<i>Buddleja davidii</i>	Buddleia								
<i>Cornus sanguinea</i>	Dogwood								
<i>Corylus avellana</i>	Hazel								
<i>Cotoneaster</i> sp	garden cotoneaster								
<i>Crataegus monogyna</i>	Hawthorn								
<i>Fraxinus excelsior</i>	ash								
<i>Ilex aquifolium</i>	Holly								
<i>Quercus</i> sp.	oak								
<i>Rubus fruticosus</i> agg	Bramble								
<i>Salix</i> sp	willow sp.								
<i>Achillea millefolium</i>	Yarrow								
<i>Anthoxanthum odoratum</i>	sweet vernal-grass								
<i>Anthriscus sylvestris</i>	cow parsley								
<i>Arum maculatum</i>	Cuckoopint								
<i>Asplenium scolopendrium</i>	hart's-tongue fern								
<i>Bellis perennis</i>	daisy								
<i>Cardamine</i> sp	bitter-cress species								
<i>Carex flacca</i>	glaucous sedge			NG	C G		MG		
<i>Catapodium rigidum</i>	fern-grass								
<i>Centaurea nigra</i>	common knapweed			NG	C G				
<i>Centaureum erythraea</i>	common centaury			NG	C G				
<i>Cerastium fontanum</i>	common mouse-ear								
<i>Cirsium palustre</i>	marsh thistle								
<i>Cirsium vulgare</i>	spear thistle								
<i>Conopodium majus</i>	pignut		W	NG		AG			
<i>Coronopus didymus</i>	lesser swine-cress								
<i>Dactylis glomerata</i>	cock's-foot								
<i>Dactylorhiza fuchsii</i>	common spotted orchid			NG			MG		
<i>Dryopteris filix-mas</i>	male fern								
<i>Epilobium</i> sp	willowherb species								
<i>Fallopia japonica</i>	Japanese knotweed								
<i>Festuca rubra</i>	red fescue								
<i>Ficaria verna</i>	lesser celandine								
<i>Fragaria vesca</i>	wild strawberry								
<i>Galium aparine</i>	cleavers								
<i>Geranium dissectum</i>	cut-leaved crane's bill								
<i>Geranium robertianum</i>	herb Robert								
<i>Glechoma hederacea</i>	ground ivy								
<i>Hedera helix</i>	ivy								
<i>Helminthotheca echioides</i>	bristly oxtongue								
<i>Heracleum sphondylium</i>	hogweed								
<i>Hieracium</i> sp	hawkweed					AG			

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<i>Hippuris vulgaris</i>	mare's tail	C S						
<i>Holcus lanatus</i>	Yorkshire fog							
<i>Hyacinthoides non-scripta</i>	bluebell		W					
<i>Hyacinthoides x massartiana</i>	Hybrid bluebell							
<i>Hypericum androsaemum</i>	tutsan		W					
<i>Hypericum maculatum</i>	imperforate St John's-wort			NG				
<i>Hypericum perforatum</i>	perforate St john's-wort			NG	C G			
<i>Hypochaeris radicata</i>	common cat's-ear							
<i>Juncus inflexus</i>	hard rush							
<i>Linum catharticum</i>	fairy flax							
<i>Linum usitatissimum</i>	flax							
<i>Lolium perenne</i>	perennial rye-grass							
<i>Lotus corniculatus</i>	common bird's-foot trefoil			NG	C G			PI L
<i>Lotus pedunculatus</i>	greater bird's-foot-trefoil						MG	
<i>Luzula campestris</i>	field wood-rush			NG				
<i>Mercurialis perennis</i>	dog's mercury		W					
<i>Myosotis arvensis</i>	field forget-me-not							
<i>Myosotis discolor</i>	changing forget-me-not							
<i>Ophrys apifera</i>	Bee orchid	C S			C G			
<i>Plantago lanceolata</i>	ribwort plantain							
<i>Potentilla anserina</i>	silverweed							
<i>Potentilla reptans</i>	creeping cinquefoil							
<i>Potentilla sterilis</i>	barren strawberry		W		C G			
<i>Primula vulgaris</i>	primrose		W					
<i>Prunella vulgaris</i>	self heal							
<i>Pteridium aquilinum</i>	bracken							
<i>Ranunculus repens</i>	creeping buttercup							
<i>Rumex acetosa</i>	common sorrel							PI L
<i>Rumex obtusifolius</i>	broad-leaved dock							
<i>Senecio jacobaea</i>	common ragwort							
<i>Sisymbrium officinale</i>	hedge mustard							
<i>Stellaria holostea</i>	greater stitchwort							
<i>Tamus communis</i>	black bryony							
<i>Taraxacum officinalis</i> agg	dandelion							
<i>Trifolium pratense</i>	red clover			NG				
<i>Tussilago farfara</i>	colt's-foot							PI L
<i>Urtica dioica</i>	common nettle							
<i>Verbascum thapsus</i>	great mullein							PI L
<i>Veronica serpyllifolia</i>	thyme-leaved speedwell							
<i>Vicia sativa</i>	common vetch							
<i>Vicia hirsuta</i>	hairy tare							
<i>Vinca minor</i>	Lesser periwinkle							
<i>Vulpia</i> sp	Annual fescue species							
	Totals	2	7	10	7	2	3	4

Indicator Species

CS – Contributory Species, W - Woodland, NG - Neutral Grassland, CG - Calcareous Grassland, AG – Acid Grassland, MG – Marshy Grassland, PIL – Post Industrial Landscape

APPENDIX 4: 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 5: 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

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

<i>Clematis vitalba</i>	Traveller's-joy
<i>Lonicera periclymenum</i>	Honeysuckle
<i>Solanum dulcamara</i>	Bittersweet
<i>Tamus communis</i>	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 (<i>Viburnum x bodnantense</i>)	Lilac (<i>Syringa vulgaris</i>)
Californian lilac (<i>Ceanothus spp.</i>)	Mahonia (<i>Mahonia spp.</i>)
Firethorn (<i>Pyracantha spp.</i>)	Mock orange (<i>Philadelphus spp.</i>)
Laurustinus (<i>Viburnum tinus</i>)	Serviceberry (<i>Amelanchier canadensis</i>)
Japanese quince (<i>Chaenomeles japonica</i>)	White jasmine (<i>Jasminium officinale</i>)

Herbs

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

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

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 6: EXAMPLES OF SUITABLE BIRD AND BAT BOX DESIGNS

EXAMPLES OF SURFACE-MOUNTED BAT BOXES

Tree-mounted boxes



Schwegler 2F General Box



Schwegler 1FD Nursery Box



Schwegler 1FS Nursery Box (Large)



Schwegler 1FW Winter Box
(Very large box)



Schwegler 2FN
Noctule Box



Schwegler 2F DFP
Daubenton's Bat Box



Miramar General Box

Tree or building-mounted boxes



Schwegler 1FF General Box



Schwegler 1FQ Decorative Box



Schwegler 1FFH General Box



Vivara Woodstone Low Profile Box



NHBS Cavity Box
(Brown Long-Eared Bat Box)



NHBS Crevice Box

EXAMPLES OF INTEGRATED BAT BOXES

Suitable for rendering over, leaving just the entrance exposed



Schwegler 1FR



Schwegler 1FE



Schwegler 1WI
(Hibernation box)



ACO Integrated

Brick or custom-faced boxes



Habibat Custom Face
(Can have any facing)



BirdBrickHouse
Brick-faced bat box

Wall cavity boxes



Ibstock Type B



Small Red
215 x 215 mm

Ibstock Type B
(Small)



Wildex Wall Cavity
(Large)



Wildex Wall Cavity
(Small)



Vivara Pro
Woodstone Built-in

Exposed at surface



Schwegler 27



Ibstock Type C

EXAMPLES OF NON-INTEGRATED BIRD BOXES FOR TREES AND BUILDINGS

Suspended Designs



Schwegler 1B
General box



Schwegler 2H open-front
'robin' box



Schwegler 5
'large owl' box



Schwegler 1CGA
'small owl' box



Schwegler 20
'starling' box



Schwegler 28 'kestrel' box



Schwegler 5KL 'nuthatch' box

Surface-mounted Designs



Schwegler 1MR general box



Vivara Pro open-front
'robin' box



Vivara Pro ova open-front
'robin' box



Vivara Pro 'starling' box



Vivara Pro 28/32mm
general box



Vivara Pro 28/32mm
oval general box

PHOTOGRAPHS OF SITE (March and May 2020)

Plot 12	
	
View of Plot 12 from the south east corner looking north west	Tarmac pathway and woodland river edge marking the eastern boundary of Plot 12
	
Cleared ground with large brush piles	Bare ground with brush piles
	
Trees and woodland edge and tarmac pavement that line the eastern boundary of the site	River that runs to the eastern boundary of Plot 12



Large brush piles



Large brush piles on plot 12



Tarmac path along eastern boundary of plot 12 and some scrub habitats to the north/northeast of the site



Large brush piles



Waterlogged bare ground with machinery tracks across plot 12



North western corner with mares tail growing on bare earth



Hedgerow and mares tail to the north of Plot 12



Hedgerow with trees marking the western boundary with large brush piles piled against the hedgerow



Brush piles up against the western hedgerow of plot 12



Southern hedgerow/ woodland area of plot 12



Bare earth of plot 12



Tarmac path and hedgerow of southern most boundary of plot 12

Plot 14



Amenity grassland area of plot 14

Amenity grassland area to the south of plot 14



Machinery tracts and bare earth where plot has been recently cleared

Eastern portion of the site.



Cleared eastern area of plot 14

Hillside and hedgerow and scrub habitats visible to the north of plot 14



Large brush piles against the northern hedgerow



Northern hedgerow of plot 14



View from hilltop at north of site, looking south across plot 14



Bare ground of plot 14



Hilltop to the north of the plot that has been stripped to approximately halfway up. Lichen communities visible on intact grassland habitat



Scrub habitats surrounding gated feature to the north east of plot 14



View looking west of plot 14



Scrub and young trees lining the northern boundary of plot 14



Felled willow along the western hedgerow left as brash pile up against the hedge



Pylon and western hedgerow of plot 14 where dormouse was found using nest tube



Bracken and scrub habitats close to pylon of plot 14



Stone material pile to the west of plot 14



Large brash pile located to the south west of Plot 14



Stone pile to the west of Plot 14



Southern slope of plot 14 with tree stumps visible



Cleared slope habitats to the south of plot 14 and amenity grassland area.

**Cardiff Gate Plot 12 & Plot 14
Ecological Assessment**


Plan 1: Site Location and Context

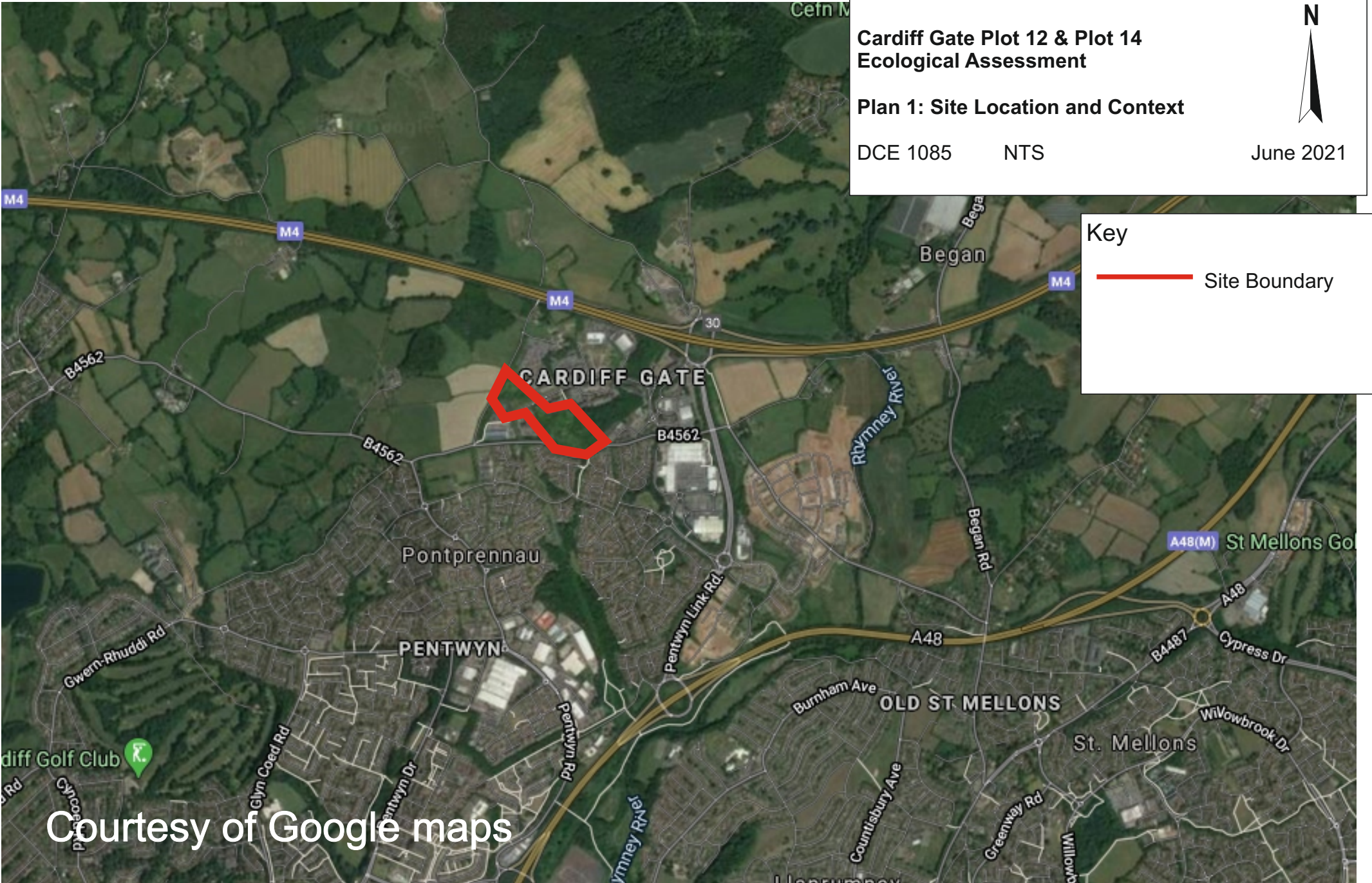
DCE 1085 NTS

June 2021



Key

 Site Boundary



Courtesy of Google maps

**Cardiff Gate Plot 12 & Plot 14
Ecological Assessment**

















Plan 2: Habitats & Vegetation

DCE 1085 NTS

June 2021



Key

-  Bare Ground
-  Bracken
-  Scrub
-  Japanese Knotweed
-  Hardstanding
-  Species poor SI grassland
-  Neutral grassland
-  Stone pile
-  Hedgerows
-  Red line boundary
-  Stream
-  Cotoneaster
-  Himalayan balsam
-  Badger dung
-  Horsetail
-  Brush piles (scattered)

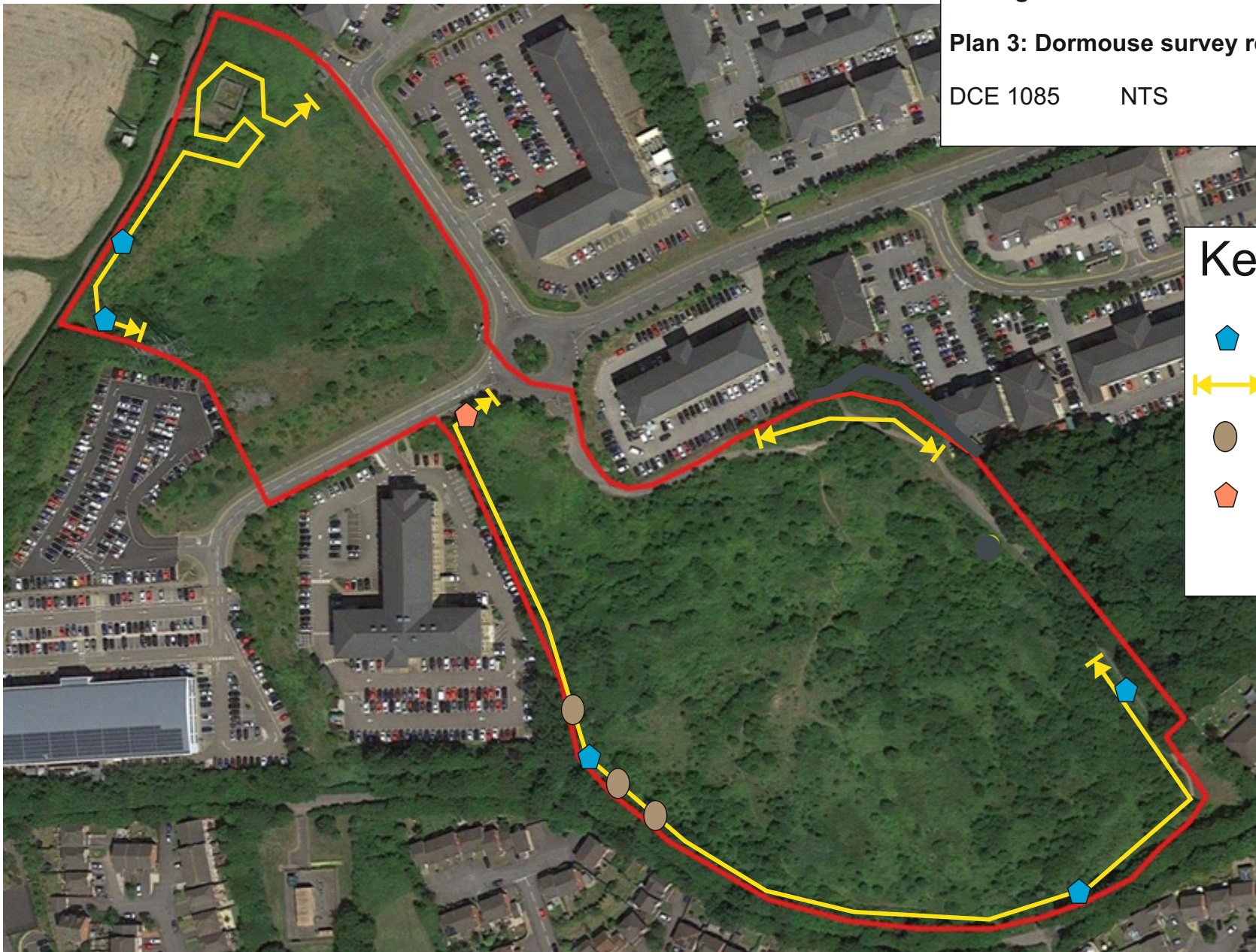
**Cardiff Gate Plot 12 & Plot 14
Ecological Assessment**

Plan 3: Dormouse survey results





DCE 1085

NTS

June 2021



Key

-  Live dormouse
-  Tube locations
-  Dormouse nuts
-  Dormouse nest



**Cardiff Gate Plot 12 & Plot 14
Ecological Assessment**

Plan 4: Reptile Refugia Locations

DCE 1085

NTS

June 2021

Key

- Refugia location
- Site boundary



**Cardiff Gate Plot 12 & Plot 14
Ecological Assessment**

Plan 5: Ecological Value


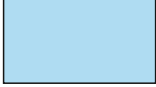

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NTS

June 2021



Key

-  High Local Value
-  Local Value
-  Negligible Value