# USW Caerleon
# Environmental Statement

## Chapter H: Ecology

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# Contents


**H1.0 Introduction 1**

About the Author 1

**H2.0 Policy Context 2**

Legislative Framework 2

Wildlife Legislation 3

Further Guidance 3

**H3.0 Assessment Methodology & Significance Criteria 4**

Assessment Methodology 4

Significance Criteria 7

Assumptions and Limitations 7

**H4.0 Baseline Conditions 8**

Existing Conditions 8

**H5.0 Potential Effects 27**

During Construction 28

During Operation 32

**H6.0 Mitigation and Monitoring 35**

During Construction 36

During Operation 39

**H7.0 Residual Effects 42**

During Construction 42

During Operation 47

**H8.0 Summary & Conclusions 51**

**H9.0 Abbreviations & Definitions 52**

**H10.0 References 53**

# H1.0 Introduction

H1.1 This chapter of the ES assesses the likely significant effects in respect of the proposed residential development of Caerleon University Campus (hereafter referred to as the EIA site) on important ecological features; including species populations, habitats and designated sites.

H1.2 The chapter describes: the policy context (H2); the assessment methodology (H3); the ecological baseline conditions at the EIA site and surroundings (H4); the likely significant environmental effects (H5); the mitigation measures required to prevent, reduce or offset any significant negative effects (H6); and the likely residual effects after these measures have been employed (H7).

H1.3 The chapter is based upon the findings of detailed survey work undertaken by Tyler Grange in 2015 and Ecosulis between 2015 and 2016, and upon the results of further update ecology survey work completed by The Environmental Dimension Partnership Ltd (EDP) during 2019. The detailed findings of the ecological surveys undertaken of the EIA site are set out within Appendix H1.

## About the Author

H1.4 This chapter of the Environmental Statement (ES) has been produced by Emily Williams, a competent Principal Ecologist from The Environmental Dimension Partnership Ltd (EDP), who is a full member of the Chartered Institute of Ecology and Environmental Management (CIEEM). Emily has over 11 years-experience as an ecologist, 9 of which have been as a consultant within the private sector. Emily possesses extensive survey experience within a wide range of habitats across both terrestrial, freshwater and marine environments, and has experience in undertaking surveys for a range of protected species to inform planning applications for development (including EIA), land management/remediation schemes and habitat creation, restoration and enhancement in both England and Wales. This is in addition to the design and implementation of mitigation strategies for ecological receptors to be delivered within and alongside development proposals.

H1.5 This chapter has been prepared with reference to The Chartered Institute of Ecology and Environmental Management's (CIEEM) Ecological Impact Assessment Guidelines.

H2.7 The Welsh Government is also required to ensure that its policies contribute to the conservation of the abundance and diversity of native wildlife and its habitats and minimise the adverse effects on wildlife where conflict of interest is unavoidable. In addition, the Wales Biodiversity Partnership was formed to guide and inform the biodiversity process in Wales, in fulfilment of its duty under Section 42 of the *Natural Environment and Rural Committees (NERC) Act* (2006) at that time. The Environment (Wales) Act has since become law in 2016, setting out a requirement for the sustainable management of natural resources necessary to build greater resilience into ecosystems, thereby providing a context for the delivery of multi-functional green infrastructure. Section 6 under Part 1 of this Act introduced an enhanced biodiversity and resilience of ecosystems duty for public authorities in the exercise of its function in relation to Wales. Additionally, Section 7 of this Act sets out a requirement for biodiversity lists of priority habitats and species of principle importance to conservation in Wales to be published and maintained, thereby replacing Section 42 of the NERC Act. Habitat Action Plans relevant to the EIA site include broadleaved, mixed and yew woodland, while Species Action Plans relevant to the EIA site include a number of bat species.

## Wildlife Legislation

H2.8 Animal and plant species that are considered to be threatened as a result of their rarity, vulnerability or persecution are afforded protection through both European and UK law. The *Conservation of Habitats and Species Regulations* 2017 protects a number of rare and vulnerable animal and plant species listed for protection in Europe, whilst the *Wildlife and Countryside Act*, 1981 (as amended by the *Countryside and Rights of Way Act*, 2000 and *Natural Environment and Rural Communities Act* 2006) affords protection to wild bird species requiring protection in Europe, and other rare or vulnerable native species of animals and plants, not protected under the *Conservation of Habitats and Species Regulations* 2017. In addition, the Animal Welfare Act 2006 further protects wild animals from unnecessary suffering when under the control of man and includes the *Wild Mammals (Protection) Act* 1996 which protects wild mammals from intentional cruelty and the *Protection of Badgers Act* 1992 which affords protection specifically to badgers.

H2.9 Legislation also fully protects European Sites including Special Protection Areas (SPA), Special Areas of Conservation (SAC) and RAMSAR sites which are recommended for designation by the Joint Nature Conservation Committee (JNCC). Sites of Special Scientific Interest (SSSIs) of national importance, designated by Natural England under the *Wildlife and Countryside Act* 1981 (as amended), are also protected from any development that may destroy or adversely affect such sites, either directly or indirectly.

H2.10 'Important' hedgerows, as defined in the Regulations are protected from removal (up-rooting or otherwise destroying) by the *Hedgerow Regulations* 1997.

## Further Guidance

H2.11 The approach taken in this assessment is made with reference to the guidelines published by the Chartered Institute of Ecology and Environmental Management (CIEEM) in September 2018.

- A visual assessment of all on-site buildings associated for bat roosting potential, completed during May 2019;
- Dusk emergence/dawn re-entry surveys of buildings with roosting potential undertaken between June and August 2019;
- Manual transect surveys conducted on 24 April, 20 May, 26 June and 25 July 2019;
- Automated detector surveys conducted in April, May, June, July and August 2019;
- Badger walkover survey of the land ownership boundary during 2019;
- Habitat Suitability Index assessment of a single on-site pond for potential to support great crested newt; and
- Reptile surveys undertaken on seven occasions during May 2019 to confirm presence/likely absence of common reptiles.

H3.6 This document also considers additional baseline ecology information previously compiled by Tyler Grange in 2015 and Ecosulis during 2015 and 2016, further details of which are provided with Appendix H1 and which are summarised below:

**Evaluation Methodology**

H3.7 The evaluation of Important Ecological Features (IEFs) has been made with reference to the guidelines published by the Chartered Institute of Ecology and Environmental Management (CIEEM) in September 2018. The guidelines propose an approach to valuing features that involve professional judgement based on available guidance and information, together with advice from experts who know the locality of the project and/or the distribution and status of the species or features that are being considered.

H3.8 In addition, the following best practice guidance in relation to survey techniques and mitigation measures have been taken into account:

- Handbook for Phase 1 habitat survey: A Technique for Environmental Audit;
- Bat Surveys for Professional Ecologists: Good Practice Guidelines, 3rd Edition;
- Surveying Badgers;
- National Badger Survey: The history, distribution, status and habitat requirements of the Badger in Britain;
- Evaluating the suitability of habitat for the Great Crested Newt (*Triturus cristatus*); and
- Reptile survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation.

**Geographical Context**

H3.9 The Guidelines recommend that the value or potential value of an ecological resource or feature be determined within a defined geographical context and recommends that the following frame of reference be used:

- International and European;
- National (Wales);
- Regional (South East Wales);

H3.16 When describing changes/activities and impacts on ecosystem structure and function, reference should be made to the following parameters:

- Positive or negative;
- Extent;
- Magnitude;
- Duration;
- Timing;
- Frequency; and
- Reversibility.

H3.17 In order to characterise the likely change and impact, it is necessary to take into account all the above parameters.

## Significance Criteria

H3.18 Legislation and policy guidance often require significant negative or positive impacts to be distinguished from others, although there is little guidance on how this distinction should be made. The Guidance defines an ecologically significant impact as an *"effect that either supports or undermines biodiversity conservation objectives for 'important ecological features' or for biodiversity in general"*.

H3.19 Once a potential significant impact was identified as likely to affect the integrity/favourable conservation status of a potential IEF, the value of the receptor was then used to help determine the geographical scale at which the impact is significant. If an impact is not found to be significant at the level at which the resource or feature has been valued, it may still be significant at a more local level. An impact that is of significance below a local level, or is deemed not to be significant, will be scoped out of the impact assessment.

H3.20 Although certain species and habitats may not constitute IEFs based upon their nature conservation value they may still warrant consideration during the design and mitigation of the Proposed Development on the basis of their legal protection, their implications for policies and plans, or other issues such as animal welfare issues.

H3.21 The significance of the potential impacts upon IEFs has been assessed both before and after consideration of the additional mitigation measures. The latter represents the assessment of the residual impacts of the proposals.

## Consultation

H3.22 The following statutory and non-statutory Consultees have been consulted to inform the impact assessment:

- South East Wales Biodiversity Records Centre (SEWBReC).

H3.23 The assessment work has been prepared with reference to these consultations.

## Assumptions and Limitations

H3.24 No further assumptions or limitations have been identified beyond those detailed within Appendix H1 in relation to this technical assessment.

| Designation | Distance from site | Interest Feature(s) |
|---|---|---|
| | | feature are its populations of twaite shad, sea lamprey and river lamprey. |
| SPA | | |
| Severn Estuary | 7.3km (S) | This SPA is designated for supporting populations of European importance, overwintering Bewick's swan (*Cygnus columbianus bewickii*) and migratory curlew (*Numenius arquata*), dunlin (*Calidris alpina*), pintail (*Anas acuta*), redshank (*Tringa tetanus*) and shelduck (*Tadorna tadorna*). The site also supports a population of European importance of passage ringed plover (*Charadrius hiaticula*) and is a wetland of international importance. |
| SSSI | | |
| River Usk | 1.1km (S&E) | A watercourse designated for its aquatic habitats and associated flora and fauna. |

### Non-statutory Designations

H4.6 Within Newport, non-statutory designations for nature conservation are known as Sites of Importance for Nature Conservation (SINCs). No part of the EIA site is covered by any non-statutory designations. However, there are 11 SINCs and 6 units of Ancient Semi-natural Woodland (ASNW) within the EIA site's potential Zone of Influence as described in Table H4.2 below and illustrated in Appendix H1.

Table H4.2 Summary of SINCs within or immediately bounding the EIA Site

| Designation | Distance from Site | Interest Feature(s) |
|---|---|---|
| SINC | | |
| Afon Llwyd SINC (C7) | 0.4km (E) | A freshwater tributary of the River Usk that supports an otter population. |
| Afon Llwyd Grasslands SINC (C12 & C17) | 0.6km (SE) | Large area of semi-improved marshy and dry neutral grassland used by otter. |
| Lodge Wood ASNW (C2) | 0.6km (NW) | Ancient semi-natural woodland. |
| Trinity View SINC (C4) | 0.7km (W) | Mosaic habitat of scrub woodland and grassland. |
| Coed y Gatlas ASNW (C6) | 0.8km (NW) | Ancient semi-natural woodland. |
| Ponthir Sewage Work SINC (131) | 0.8km (N) | Lowland grassland and woodland with open standing water and wetland. |
| Hillcroft Field ASNW (C15) | 0.8km (W) | Ancient semi-natural woodland. |
| Graig Yr Eurych ASNW (C3) | 0.9km (NW) | Ancient semi-natural woodland. |
| Flooded Field SINC (C16) | 1.0km (S) | Large flooded fields designated for its bird population which includes lapwing (*Vanellus vanellus*) and redshank. |
| Moorings SINC (STJ2) | 1.0km (SW) | Site contains breeding Cetti's warbler (*Cettia cetti*). |
| St Julians Park SINC (BE1 & C5) | 1.2km (S) | A large mosaic site of improved, semi-improved and unimproved neutral grassland areas with bracken and scrub. The site also contains broadleaved woodland. |
| Llantarnam Abbey Bat Roost SINC (162) | 1.3km (NW) | Site contains a lesser horseshoe bat (*Rhinolophus hipposideros*) roost within the bell tower. The area is also a known otter breeding site. |
| Bulmore Road Fields SINC (C13) | 1.4km (SE) | Semi-improved acidic grassland. |
| Glebelands SINC (STJ1) | 1.6km (SW) | Former landfill site covered with amenity grassland, woodland and scrub. Forms part of the River Usk corridor. |
| Pilton Vale West SINC | 1.9km (W) | Unimproved neutral-grassland with bracken slopes. |

the EIA site including bird's-foot trefoil, geranium (*Geranium sp.*), black medick (*Medicago lupulina*) and sedge (*Carex sp.*).

H4.12 Amenity grassland areas located within the centre of the EIA site are, in contrast to the rest of the site, heavily manicured and subject to frequent mowing with limited species recorded within the sward.

H4.13 Overall, the grassland sward appears relatively diverse but given variations in its species composition often dominated by one species or another, it is considered likely that such habitats are seeded rather than occurring naturally. Amenity grassland is thus considered to be of negligible importance.

**Poor Semi-improved Grassland**

H4.14 The north-eastern corner of the EIA site comprises poor semi-improved grassland sloping steeply downwards from an access road which delineates its south-western boundary towards the boundaries of residential gardens located off-site. Poor semi-improved grassland is unmanaged (up to 0.4m tall) and tussocky. Species composition is similar to amenity grassland reported above although knapweed occurs more frequently. Bramble (*Rubus fructicosus* agg.) scrub is also encroaching across this habitat whilst bracken (*Pteridium aquilinum*) is present along the north-eastern boundary with residential gardens.

H4.15 Given poor semi-improved grassland represents a large, continuous area of habitat contiguous with bramble scrub and broadleaved woodland, this habitat is considered to be no greater than of site level importance.

**Semi-natural Broadleaved Woodland (Off-site)**

H4.16 The eastern boundary of the EIA site is contiguous with an area of broadleaved woodland dominated by mature and semi-mature ash and sycamore (*Acer pseudoplatanus*). The understorey is unmanaged and comprises bramble, holly (*Ilex aquifolium*), hawthorn (*Crataegus monogyna*) and hazel (*Corylus avellana*). The ground flora community is dominated by common ivy (*Hedera helix*), with occasional common nettle (*Urticia felina*), lesser celandine (*Ficaria verna*), harts-tongue (*Asplenium scolopendrium*) and bluebell (*Hyacinthoides non-scripta*). A habitat of Principal Importance, semi-natural broadleaved woodland is considered to be of local level importance.

**Shrub Planting**

H4.17 Areas of shrub planting are present throughout the EIA site and particularly in amongst the buildings and alongside public footpaths as well as delineating the western boundary of the EIA site. Shrub planting is dominated by non-native and ornamental species including lavender (*Lavandula sp.*), cherry laurel (*Prunus laurocerasus*), firethorn (*Pyracantha coccinea*), *Gunnera sp.* and Mexican orange blossom (*Choisya* sp.) although native varieties can occur and are encroaching across such habitats. Such species include bramble, apple (*Prunus sp.*) and pendulous sedge (*Carex pendula*).

H4.18 Small sections of non-native hedgerows delineate the fenced boundaries of the EIA site and comprise single species, either privet or laurel circa 3m high and 2.5m wide.

H4.19 Given overall dominance by non-native species with several areas that are largely isolated from one another, shrub planting is considered to be of negligible importance.

H4.29 Given the limited extent and botanical diversity, tall ruderal is considered to be of negligible importance.

### Habitat IEFs

H4.30 Those habitats considered to be Important Ecological Features (IEFs) and valued at or above Local level requiring consideration within this detailed assessment are summarised within Table H4.3.

Table H4.3 Habitats of local value or higher within or in close proximity to the EIA Site

| IEF | Level of Importance | Distance from Site |
|---|---|---|
| Severn Estuary SAC/SPA/Ramsar | International | 7.3km (South). |
| River Usk SAC/SSSI | National | 0.7km (South & East). |
| Afon Llwyd SINC | County | 0.4km (East). |
| Afon Llwyd Grasslands | County | 0.6km (South-East). |
| Semi-natural Broadleaved Woodland | Local | Adjacent to the eastern boundary of the EIA site. |
| Scattered Trees | Local | Across the EIA site. |

H4.31 The valued habitats noted above, together with other habitats within the EIA site of low or negligible intrinsic value, have also been found in some instances to support, or have the potential to support protected or notable species. This is discussed further within the 'Species' sub-sections below.

### Protected and Priority Species

H4.32 As set out previously, information on protected and/or notable species within or near to the EIA site were collected through a desk study and a range of field surveys. The findings of these investigations are set out in full in Appendix H1 and are summarised below.

### Breeding Birds

H4.33 Numerous bird records were returned during the desk study, the closest of which relate to areas of residential housing surrounding the EIA site. Records of red listed species[1] include lapwing (*Vanellus vanellus*), spotted flycatcher (*Muscicapa striata*), grasshopper warbler (*Locustella naevia*), linnet (*Linaria cannabina*), yellow wagtail (*Motacilla flava*), black–headed gull (*Chroicocephalus ridibundus*), curlew (*Numenius arquata*), starling (*Sturnus vulgaris*), bullfinch (*Pyrrhula pyrrhula*) and wood warbler (*Phylloscopus sibilatrix*). Amber listed species include skylark (*Alauda arvensis*), reed bunting (*Emberiza schoeniclus*), house sparrow (*Passer domesticus*) and song thrush (*Turdus philomelos*).

H4.34 Schedule 1 species records received include those relating to barn owl (*Tyto alba*), recorded most recently in 2016 and associated with agricultural land in the wider landscape. This is in addition to records for Cetti's warbler (*Emberiza cirlus*), brambling (*Fringilla montifringilla*), green sandpiper (*Tringa ochropus*) greenshank (*Tringa nebularia*), fieldfare (*Turdus pilaris*), common crossbill (*Loxia curvirostra*), Mediterranean gull (*Ichthyaetus melanocephalus*), little ringed plover (*Charadrius dubius*), black tailed-godwit (*Limosa limosa*), red kite (*Milvus milvus*) and peregrine (*Falco peregrinus*) amongst others. Such records are predominantly associated with the wider agricultural landscape or otherwise the River Usk located 0.7km to the south and east of the EIA site.

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

Table H4.4 Ground level Tree Inspection Results, May 2019

| Tree ID | Species | Description (including BS5837:2012 Tree Survey Categorisation and key features) | Bat Roost Potential May 2019 |
|---|---|---|---|
| T7.1 | Apple tree | Three limb holes observed. | Moderate |
| T7.2 | Apple tree | One knot hole observed facing north. | Moderate |
| T7.3 | Apple tree | One knot hole observed. | Low |
| T23.1 | Ash tree | Covered in dense ivy. | Low |
| T23.2 | Pine tree | The tree has flaking bark. | Moderate |
| T23.3 | Sequioa tree | Folds within the bark offering limited potential for roosting bats, especially immediately under the tree limbs which could provide some shelter. | Low |
| T23.4 | Sequioa tree | Folds within the bark offering limited potential for roosting bats, especially immediately under the tree limbs which could provide some shelter. | Low |
| T23.5 | Pine tree | Pine tree with flaking bark. | Moderate |
| T23.6 | Ash tree | Old ash tree with rot holes visible and flaking bark. | Moderate |
| T23.7 | Common wayfaring tree | The tree has dense ivy. | Moderate |
| T16 | Ornamental flowering cherry | Cat B. Splits in tree trunk observed. | Moderate |
| T48 | Sessile oak | Cat B. Splits and flaking bark. | Moderate |
| T53 | Deodar cedar | Cat A. One limb broken off. | Low |
| T60 | Common lyme tree | Cat A. Three rot holes observed, one on the limb and two on the main trunk. | Moderate |
| T61 | Silver birch | Cat C. One limb hole observed approximately 4m off the ground. | Moderate |
| T80 | Horse chestnut | Cat. U. Flaking bark. | Low |
| T90 | Foxglove tree | Cat A. One limb hole observed. | Moderate |
| T91 | Black mulberry | Cat. U. A pronounced split observed at the base of the tree. | Low |
| T92 | Common walnut | Cat A. Two shallow limb holes observed. | Low |

| Tree ID | Species | Description (including BS5837:2012 Tree Survey Categorisation and key features) | Bat Roost Potential September 2019 |
|---|---|---|---|
| | | approximately 4.5m off the ground. It measures 20cm in depth and 2cm in width. Woodlice were present within the knot-hole.<br><br>A woodpecker hole is present within the southern facing limb. The height of the hole is approximately 3.5m off the ground. Its depth is 35cm and measures 3cm in width. Woodlice were present within the woodpecker hole. | |
| T105 | Common Horse Chestnut | A lifting bark plate is present along north-west and south-east aspect of the tree approximately 2.2m and 2m off the ground. The height away from the step measures approximately 30cm and 5cm and the width measuring approximately 2cm. | Moderate |

**Bat Roost Assessment: Buildings**

H4.43 A visual assessment of on-site buildings for potential to support roosting bats, undertaken by Ecosulis in September 2015 with internal inspections of the Camelot/Dolaucothi accommodation blocks undertaken in October 2016, identified four buildings with moderate suitability to support roosting bats (B1/2, B3/4, B8 and B16). A further five buildings were assessed as having low suitability to support roosting bats (B5-7 and B10-11) with remaining buildings considered to have negligible potential. No signs of bats were recorded during visual inspections with the exception of a single, degraded bat dropping recorded on a third-floor window sill of the Camelot/Dolaucothi accommodation block.

H4.44 Following completion of a visual assessment in 2015, an indicative emergence survey was undertaken by Ecosulis on 28 September 2015 during which four surveyors were positioned around the campus. During the survey, bat activity was recorded in order to identify potential 'hotspots' of activity around groups of buildings. During the survey, no bats were recorded emerging from or entering any of the buildings. However, there were records of very early bat activity close to sunset by Felthorpe House (B16) in the south-east corner of the EIA site, indicating presence of a roost in close proximity.

H4.45 Initial survey effort was followed by dusk emergence and dawn re-entry surveys of nine buildings (B2-8, B10-11 and B16) with low-moderate potential to support roosting bats in May and June 2016. During the dawn survey, a single common pipistrelle was recorded re-entering Felthorpe House (B16). Four unidentified bats (presumed to be *Myotis* species following an internal visual inspection of the building) were also noted re-entering the Camelot/Dolaucothi (B1/B2) accommodation block above a window lintel on the third floor.

H4.46 As such, Felthorpe House and the Camelot/Dolaucothi accommodation block have previously been confirmed as roosts for common pipistrelle and presumed *Myotis* bat species following the detailed survey effort undertaken by Ecosulis in 2016.

H4.47 The results of the bat building assessment update undertaken by EDP are largely comparable to the results of initial inspections undertaken by Ecosulis in 2015 and 2016. Four buildings were considered to have moderate suitability to support roosting bats (B1/2, B3/4, B8 and B16) whilst

| | | | |
|---|---|---|---|
| **B6: Edward Anwyl** | Non-rendered external brick walls, low pitched roof made of corrugated metal and bitumen felt on top. The building has several chimney fue pipes. The eves and gable ends are enclosed with timber. | The gable ends have some gaps along the projecting eves, which could potentially lead into the structure.<br><br>The roof itself is in a good state of repair with bitumen felt intact and the chimney flue pipes tightly fitted. No light ingress was observed from the inside of the loft void, which is well maintained.<br><br>No signs of bats. No nesting birds. | Low summer roosting and negligible hibernation potential.<br><br>No change in ecological baseline. |
| **B7: Library** | External walls made of brick and concrete breezeblock, with external render. The roof is flat and does not appear to provide roosting opportunities. Single storey extension is located along southern elevation and covered with concrete roof tiles. A projecting roof covered with concrete roof tiles is located along the north entrance. | There is a gap along the south-western roof corner of the extension, where mortar has fallen out. The gap appears to lead under the roof tiles.<br><br>Lead flashing located along the northern elevation of the library is slightly raised providing low potential roosting opportunities.<br><br>No signs of bats. No nesting birds. | Low summer roosting and negligible hibernation potential.<br><br>No change in ecological baseline. |
| **B8: Main Building** | The main building is a three storey Grade II listed manor house. The building has a clock tower positioned in its middle with the roof area possessing several complex loft voids covered with natural slate roof tiles and clay ridge tiles. The external walls are made of stone. | The building is in good condition overall with external walls intact with no missing mortar.<br><br>There are several slate roof tiles which are raised and some gaps leading under the ridge tiles with missing mortar. There could be potential access leading internally along the roof valleys.<br><br>The internal loft voids are in some places insulated with celotex, whereas other areas have timber cladding with no roof lining.<br><br>No signs of bats. No nesting birds. | Moderate summer roosting and low hibernation potential.<br><br>No change in ecological baseline. |

| | | | |
|---|---|---|---|
| **B12-B15: Student Blocks 1, 2, 3 and 4** | The student blocks are well preserved buildings with external walls made out of brick, which is partly rendered. The roof is covered with concrete tiles which are in good condition. | There are 15 student blocks, four of them positioned individually and 11 of them joined together into three units.<br>Four of the blocks have hanging tiles at their gable ends and were, therefore, assessed as having low potential for roosting bats. Internal roof void areas appear to be tightly sealed, with some light ingress coming in through the eves. However, the eaves have a mesh covering which is preventing access by bats. The roof is internally lined with plastic sheeting.<br>No signs of bats. No nesting birds. | Low summer roosting and negligible hibernation potential of 4 student blocks.<br>Change in ecological baseline. Assessed as negligible potential during 2015/2016. |
| **B16: Felthorpe House** | The building is made of external brick walls which are non-rendered. The roof is covered with natural slate tiles. | The building is in a good state of repair with some light ingress coming into the void around the eves. Internally the roof void is lined with bitumen felt. Some of the roof tiles are out of alignment.<br>No signs of bats. No nesting birds. | Confirmed bat roost in 2016 by Ecosulis.<br>No evidence of roosting bats identified during internal inspection in 2019. |

**Dusk Emergence/Dawn Re-entry Surveys**

H4.49 Dusk emergence and/or dawn re-entry surveys of buildings B1/B2, B3/4, B5-B7 and B10-15 with bat roost potential have been undertaken by EDP between June and August 2019.

H4.50 During a dusk emergence survey of building B3 on 24 June 2019, three common pipistrelle bats were identified emerging from a soffit box on the western elevation between 22:01 and 22:36. This is in addition to emergence of a single common pipistrelle bat from a soffit box on the western elevation of B3 at 22:11.

H4.51 A dusk emergence survey of B3/B4 undertaken on 5 August 2019 identified two common pipistrelle bats emerging from the soffit box near the central gable end of the eastern elevation at 21:30 and 21:40 in addition to one common pipistrelle emerging at 21:29 from a second location.

H4.52 During a dusk emergence survey of B1/B2 on 25 June 2019, a single common pipistrelle emerged from the soffit box on the western elevation at 22:26 whilst a possible re-entry of a common pipistrelle bat was recorded during a dawn re-entry survey on 18 July 2019 at 04:05. A single common pipistrelle bat was also observed emerging from the soffit box along the south eastern corner of B2 during a second dusk emergence survey.

H4.53 With respect to B16, a single common pipistrelle was recorded entering a roosting feature within the eaves on the northern elevation of the building at 22:01 on 25 June 2019 On 5 August 2019,

declines, national population monitoring[5] indicates that common pipistrelle bats are stable nationally and increasing. Common pipistrelle bat was found to be the dominant species utilising the EIA site during the activity surveys and was predominantly associated with the north eastern, eastern and southern edges of the site. Individual bats were also seen commuting and foraging between campus buildings with random distribution. There was a decrease in activity above the open parking space in the south-western corner of the site. With respect to roosting individuals, it is considered that buildings B1/B2, B3/4 and B16 each support a summer day roost for low numbers of common pipistrelle bats. Common pipistrelle bats using the EIA site are, therefore, considered to be of local importance.

H4.60 Myotid bat species occur throughout most of the UK, their populations considered to be either stable or increasing in most cases[6]. Individual Myotid bats were infrequently recorded during automated detector surveys. Dusk emergence/dawn re-entry surveys of buildings undertaken by Ecosulis in 2015 noted four bats (presumed to be *Myotis* species following an internal visual inspection of the building) were also noted re-entering the Camelot/Dolaucothi (B1/B2) accommodation block indicating presence of a low status day/transitional roost within this building. However, no evidence of current roosts were identified by EDP during the update survey effort. Based upon this data, the use of the EIA site by Myotid bat species is likely to be of no more than local importance.

H4.61 Noctule bats are widespread across the UK, with its population and range considered to remain stable in the UK[7]. Only low number of noctule bats were recorded by surveyors and static detectors between April and July 2019. An increase in the number of passes by this species was, however, recorded during August 2019. Nevertheless, noctule bats using the EIA site are therefore considered to be of site level importance.

H4.62 Soprano pipistrelle bats are widely distributed across the UK, and whilst populations declined dramatically in the twentieth century, field survey data show statistically significant population increases[8]. Although only encountered infrequently during activity surveys, typically associated with the northern, eastern and southern boundaries of the EIA site, a summer day roost for soprano pipistrelle was identified within B16, soprano pipistrelle bats supported by the EIA site are therefore considered to be of local importance.

H4.63 Brown long-eared bats are considered to be widespread and common across the UK with national populations considered stable. In contrast, populations of grey-long eared bat are largely limited to the south coast of England although this species is under recorded. Brown long-eared bat was recorded only once with remote detector work along the northern boundary of Felthorpe House although this species is likely to be underrepresented given it's not often picked up by bat detectors. The population of long-eared bat species supported by the EIA site is considered to be of Local importance.

H4.64 Serotine bats are restricted to southern England and Wales where they are widespread, but scarce, albeit populations are stable nationally. With respect to Leisler's bats, this species is uncommon but widespread throughout England, Wales and Scotland. Both Leisler's and serotine bats were recorded in association with dense vegetation along the northern boundary of Felthorpe House during June 2019 with the help of remote detector surveying. Therefore, even though the recordings of serotine and Leislers bats were scarce, they do indicate the importance of the vegetation along the south-eastern site boundary as a key commuting corridor for several species of bats. Given their rarity, serotine bats using the EIA site are considered to be of Local

[5] Bat Conservation Trust, 2018. The National Bat Monitoring Programme. Annual Report 2017
[6] Bat Conservation Trust, 2018. The National Bat Monitoring Programme. Annual Report 2017
[7] Bat Conservation Trust, 2018. The National Bat Monitoring Programme. Annual Report 2017
[8] Bat Conservation Trust, 2018. The National Bat Monitoring Programme. Annual Report 2017

### Great Crested Newt

H4.75 A desk study assessment returned six records of great crested newt within 2km of the EIA site. The two most recent records were located 800m south-east of the EIA site and dated from 2011 and 2012. This is in addition to records for common frog (*Rana temporaria*), common toad (*Bufo bufo*) and smooth newt (*Lissotriton vulgaris*), the closest of which are within 410m south of the EIA site.

H4.76 A single waterbody was identified within the south-east corner of the EIA site, but which was considered unsuitable for great crested newt due to its artificial nature, poor water quality and limited macrophyte diversity. The habitat suitability assessment confirmed the pond to be of poor suitability to support great crested newt. Detailed results of the habitat suitability assessment are provided at Appendix H1. An additional waterbody was identified within 500m of the EIA site (370m south-west).However, this waterbody is located beyond a main road and residential development which is considered a barrier to the dispersal of great crested newt.

H4.77 Terrestrial habitat on-site is limited to amenity/poor semi-improved grassland and dense scrub which is considered of limited suitability for this species and further patchy in its distribution, fragmented by buildings and hardstanding. Existing development surrounding the EIA site is considered a barrier to the dispersal of great crest newt between the EIA site and suitable habitat in the wider landscape. This species is thus presumed absent from the EIA site, with the EIA site therefore considered to be of negligible importance to this species.

### Reptiles

H4.78 Several records for common reptile species were received during the desk study including: a single record for adder (*Vipera berus*) dated 2008 approximately 1.5km south of the EIA site; six records of slow-worm (*Anguis fragilis*) dated between 2004 and 2015, with the nearest record being approximately 490m north-east; nine records of grass snake (*Natrix natrix*), with seven records in association with Caerleon Comprehensive School located approximately 665m south-west and a further two records 1.7km north; and one record of common lizard from 2007 located approximately 1.6km north of the EIA site.

H4.79 With respect to the potential of the EIA site to support reptile species, habitat is predominantly limited to amenity and dense scrub which is considered of limited suitability for a reptile population and furthermore patchy in its distribution, fragmented by buildings and hardstanding. Unmanaged, poor semi-improved grassland within the north-east corner of the site is considered more suitable and offers opportunities for foraging and hibernating.

H4.80 Reptile surveys undertaken by Ecosulis between mid-September and early October 2015 found no evidence of common reptiles on-site. This is in contrast to the results of the update survey effort undertaken by EDP during 2019 which confirmed presence of a small slow-worm population within the EIA site. Full details of the number of individuals and peak survey count are given in Appendix H1. Slow-worms were associated with habitats along the north-eastern and eastern boundaries of the EIA site. These areas are predominantly represented by tussocky, unmanaged poor semi-improved grassland contiguous with off-site broadleaved woodland and residential gardens. Given the small size of the population supported and limited suitable habitat available to this species on-site, the EIA site is considered to be of site level importance only to slow-worm.

### Other Species Potentially Supported

H4.81 A desk study assessment returned records for European hedgehog (*Erinaceus europaeus*), the closest being adjacent to the eastern boundary of the EIA site. European hedgehog was also recorded within the south-eastern corner of the EIA site during a manual transect survey

# H5.0 Potential Effects

## Introduction

H5.1 A full description of the proposed development is provided at **Chapter C** of this ES. In summary, the proposals involve:

- The construction of up to 218 dwellings, including new build and the creation of apartments within the listed buildings that are to be converted/retained within the site;
- Landscaping (including re-grading) and sustainable drainage works;
- Access/Infrastructure works; and
- Removal and translocation of specified TPO trees (the remainder of TPO trees will be retained).

H5.2 An assessment of likely significant effects of the Proposed Development on the ecological features identified above has been undertaken based upon the Proposed Site Plan, Landscape Strategy and Detailed Soft Landscape Plan prepared for the EIA site (see Appendix H2,H3 and H4 respectively), which incorporates any inherent impact avoidance, minimisation and mitigation determined throughout the iterative assessment and design process. Those potential significant effects assessed include such inherent mitigation but, initially, in the absence of any other avoidance, mitigation and compensation measures.

H5.3 Whilst exact details of the construction methods to be used cannot be determined with absolute certainty at this time, a number of assumptions and parameters have been fixed for the purposes of this assessment and are described fully within Chapter C – Site and Scheme Description.

H5.4 The key inherent mitigation measures included within the proposed development pertinent to the ecological impact assessment include:

1. Buffering of adjacent habitats including broadleaved woodland aligning the eastern boundary of the EIA site;
2. Full retention of trees and associated poor semi-improved grassland within the north-east corner of the EIA site (albeit for land take associated with implementation of pedestrian links and natural play areas). This will be enhanced through long-term management of grassland habitat;
3. Retention of grassland habitats and trees associated with the southern boundary of the EIA site. This will be enhanced through long-term management of grassland habitat;
4. Retention of TPO trees T2-6, T12-17, G23, T24, T30-31, T33, T43-51, T53, T60, T76, T89, T90, T92 and T101;
5. Retention of trees G7.1-7.2, T16, G23.2, G23.5-23.7, T48 and T60, with moderate bat roost potential and G7.3, G23.1, G23.3-23.4, T53, T80, T90 and T92 with low bat potential;
6. Retention of the building B8; and
7. Implementation of a sensitive drainage design.

H5.5 Development of the EIA site includes two main stages, namely the construction (including demolition) phase comprising all site preparation works and construction of all buildings, associated infrastructure and landscaping, and the operational phase comprising the long-term occupation of the EIA site. The effects of the proposals in relation to these two stages are discussed in turn below.

H5.11 However, impacts to the Severn Estuary Ramsar/SAC/SPA and River Usk SAC associated with a deterioration in water quality and increase in suspended solids could occur during the construction phase, as a result of the discharge of contaminated run-off and deposition of material following periods of heavy rainfall into the Afon Llwyd, which could be transferred further downstream to the River Usk and Severn Estuary. Pollution incidents could also arise as a result of leaks and spills from construction activities, resulting in the introduction of hydrocarbons and other contaminants from demolition activities, site plant or of sediment loads arising from dust deposition or spoil movement.

H5.12 Whilst it is not possible to predict accurately the full ecological impact of a contamination/pollution event occurring on-site given that its scale and extent cannot be predicted, in the absence of mitigation negative effects are considered possible, though the spatial separation between the sites (circa 700m as the crow flies) for the River Usk reduces the likelihood of this occurring. Nevertheless, any unmitigated impact could lead to negative impacts which are considered to be temporary and reversible. Whilst the Severn Estuary and River Usk are valued at an International and European level respectively, given the small scale and extent of anticipated impacts, along with the spatial separation of the sites, such potential effects are considered to be significant at Local level only. Similar impacts may also arise with respect to the River Usk SSSI identified above.

H5.13 With respect to other SSSI's detailed in Table H4.1, given their distance and spatial separation from the EIA site, no significant impacts are considered likely to arise. Other national designations have therefore been scoped out of this assessment accordingly.

### Non-Statutory Designations

H5.14 Similar to that reported above, impacts to the Afon Llwyd SINC and Afon Llywd Grasslands SINC during the construction phase could potentially arise as a result of contamination/pollution incidents. The unmitigated effects upon the SINC can be characterised as a negative impact, anticipated to be temporary and reversible. Whilst the Afon Llwyd/ Afon Llwyd Grassland SINC is valued at County level, given the small scale and extent of anticipated impacts, such effects are considered to be significant at the local level only.

### Habitats

H5.15 Although located off-site, semi-natural broadleaved woodland delineates the eastern boundary of the EIA site whilst several mature and semi-mature trees, including those with assigned TPO's are scattered throughout the EIA site.

H5.16 Woodland habitat will, however, be retained in its entirety with no net loss. Notwithstanding this there remains the potential for physical damage and/or indirect degradation of this feature to occur during construction, given the proximity of built development and/or proposed landscaping works. Retained woodland may be further subject to indirect impacts, such as soil compaction, erosion and pollution (including air pollution). In the absence of mitigation, the extent and magnitude of such negative, medium-term (i.e. duration of the construction phase), is likely to be relatively minor owing to such habitat being restricted to site boundaries, albeit the effects could be permanent and potentially irreversible. The significance of such negative effects upon broadleaved woodland is thus considered to be at the local level only.

H5.17 Indirect effects associated with increased levels of disturbance will likely occur during the construction phase though the use of lighting and increased levels of vehicular traffic, machinery use and plant movement. Such disturbances arising can be intermittent, frequent, and/or constant throughout the construction period. Given that the majority of the works will be undertaken during daylight hours, the usage of artificial lighting will likely be limited to the early morning and early evening hours, with greater requirements for artificial lighting during

loss/disturbance to a day roost for common pipistrelle and soprano pipistrelle. Such impacts are considered significant, negative, permanent and irreversible at a local level.

H5.25 With respect to remaining buildings on-site, although several were considered to have low-moderate potential to support roosting bats following a visual assessment undertaken by Ecosulis in 2015/2016, further dusk emergence/dawn re-entry surveys during 2015 found no evidence of roosting bats. The update visual inspection completed by EDP reconfirmed the findings of the previous assessment, although buildings B12-B15, previously considered to have negligible potential for roosting bats, were upgraded to having low potential. Further detailed emergence and re-entry surveys of buildings with bat roost potential undertaken by EDP did not identify any evidence of roosting bats within remaining buildings.

H5.26 Development will result in the loss of several trees and tree groups across the EIA site including T100 and T105 with moderate potential to support roosting bats and T91 and T97 with low potential to support roosting bats. In the absence of roosting bats, direct impacts associated with loss of these trees are considered unlikely. Due to the transitory nature of this species group, however, a roost may establish itself at a later date in which case negative, permanent and irreversible effects associated with the loss of tree roosts and subsequent harm/injury of bats may arise.

H5.27 Manual transect and automated bat activity surveys have confirmed that the EIA site supports low levels of foraging and commuting activity dominated by common and widespread bat species considered to be of local importance.

H5.28 Habitats considered most important to a local bat assemblage, including grassland within the north-eastern corner and southern boundary of the site in addition to adjacent woodland, will be retained and buffered from the development footprint. Although amenity grassland and vegetation elsewhere across the site offers a foraging resource, it is limited in extent and patchy in its distribution whilst inherent lighting throughout the EIA site is likely to deter a significant bat assemblage. As such, effects associated with loss of foraging habitat and dispersal corridors are considered negligible.

H5.29 With respect to those habitat features to be retained, degradation through damage and disturbance during the construction phase could result in the further loss of roosting and breeding sites in addition to habitat important for foraging, dispersal and migration. In the absence of mitigation, the effects of such impacts upon bats are considered to be negative, permanent and potentially irreversible. The significance of such effects upon these species is considered to be of local level significance.

H5.30 Indirect disturbance (particularly light spill) upon potential tree roosts and commuting/foraging habitat may arise during construction. Such impacts can affect species through their physiology (such as through increased heart rates, metabolism and stress), and through their behaviour (such as through forced dispersal and/or displacement). Impacts could result in the abandonment of roosts, foraging territories and of commuting and dispersal corridors, which could significantly affect those species supported by the EIA site. Such disturbances arising can be intermittent, frequent, and/or constant throughout the construction period. However, given that the majority of the works will be undertaken during daylight hours, the usage of artificial lighting will likely be limited to the early morning and early evening hours, with greater requirements for artificial lighting during the winter months. Overall, potentially negative effects arising from indirect disturbance upon the local bat assemblage, although minor and temporary, are considered to be significant at the site level only.

ensuring development is appropriately located and phased so that there is capacity in the waste water, sewerage and water supply as well as the protection of water quality.

H5.37 As such and in consideration of inherent mitigation comprising delivery of a sustainable drainage strategy pollution, impacts upon designated sites are considered negligible.

H5.38 Meanwhile, an increase in residential dwellings could lead to an increase in disturbance through recreational pressure on the Severn Estuary and River Usk. However, inherent with development proposals is the inclusion of areas of open public space within the north-east corner of the EIA site, in addition to retention and reinstatement of the former playing field as public open space combined with the availability of other open accessible green spaces within the wider landscape, impacts are considered negligible.

## Non-Statutory Designations

H5.39 As outlined above, adverse impacts associated with site drainage, including surface water run-off and ground water contamination, are considered unlikely, subject to implementation of a sensitive drainage strategy in accordance with relevant planning policy which will be part of the inherent detailed design.

H5.40 Similarly, an increase in residential dwellings could lead to an increase in disturbance through recreational pressure on non-statutory designations. However, inherent mitigation inclusion provision of areas of open public space within the north-east corner of the EIA site, in addition to retention and reinstatement of the former playing field renders such impacts negligible.

### Habitat IEFs

H5.41 Increased recreational usage following occupation of the proposed development may affect sensitive woodland habitat through disturbances arising from trampling, increased noise, lighting and litter. Whilst such disturbance effects are considered to be negative, permanent, irreversible and of local significance, woodland adjacent to the EIA site is located on a naturally steep slope with no formal or informal footpaths. Such naturally inaccessible terrain would likely deter unauthorised public access such that impacts associated with recreational pressures are considered unlikely. Furthermore, the provision of alternative areas of public open space will likely redirect recreational activities away from such sensitive habitats.

H5.42 With respect to increased noise and lighting, inherent mitigation measures seek to reduce such effects arising, primarily through the provision of habitat buffers between boundaries of adjacent woodland and the proposed development footprint. In the absence of mitigation, however, such impacts are considered negative, permanent and irreversible at the local level.

H5.43 With respect to scattered trees, impacts will similarly be avoided through the provision of suitable habitat buffers combined with the provision of new tree, hedgerow and shrub planting elsewhere across the EIA site. In the absence of mitigation, however, such impacts are considered negative, permanent and irreversible at the local level.

## Species IEFs

### Breeding Birds

H5.44 Retained habitats supporting breeding and foraging birds are potentially at risk of disturbance during the operational phase of the development, in the form of light spill and noise. Nesting birds' sensitive to such disturbance could abandon nests and breeding territories and become displaced from other populations. In the absence of mitigation, negative effects upon such species are considered permanent, irreversible, and of local significance. However, such impacts are considered to be reduced given the retention and protection of ecologically valuable habitat

# H6.0 Mitigation and Monitoring

H6.1 This section sets out the principles of the avoidance, mitigation or compensation measures required to reduce any potential ecological effects to insignificant levels. Overall, many potential adverse effects have been avoided or reduced through inherent mitigation incorporated into the detailed planning drawings and drainage strategy accompanying the application, along with the spatial separation between statutory designated sites.

H6.2 Not all potential adverse effects can be avoided or reduced in severity through inherent mitigation alone. This section identifies any additional mitigation measures required to avoid, reduce or offset the potential for such significant negative effects. The key mechanisms described will include measures to:

1. Conform with relevant and pertinent legislative requirements, particularly those associated with legally protected species; and
2. Deliver and maximise opportunities for biodiversity enhancement and gain through the proposed development.

H6.3 The key mechanisms which will be implemented are:

a) **Detailed Design Measures**: The detailed planning application includes plans that illustrate the inherent mitigation measures incorporated within the scheme, including the implementation of a sensitive drainage strategy in accordance with national and local planning policy to ensure no impacts upon aquatic features. Furthermore, poor semi-improved grassland habitat within the north-east corner of the EIA site will largely be retained and enhanced through sensitive long-term management of this feature, whilst adjacent broadleaved woodland will be protected through inclusion of a suitable buffer. There will also be the inclusion of new, native tree and shrub planting (unless proven to be resilient to climate change and/or wildlife friendly), preferably of local provenance, to compensate for the loss of habitats elsewhere. Additional detailed design measures recommended include a sensitive lighting strategy during both the construction and operational phases to ensure no/limited lighting spill to adjacent habitats, as well as the installation of bird and bat roost features upon trees and new building where appropriate;

b) **Construction and Environmental Management Plan (CEMP) and Detailed Landscape Strategy**: Further detailed measures will be set out with respect to the management and control of the construction phase of the development to ensure protection of IEFs, in addition to details of the planting scheme and maintenance schedule for the development. The CEMP will set out in detail those measures which will require implementation with respect to the protection and enhancement of all IEFs and biodiversity in general during the demolition and construction phase of the proposed development.; and

c) **Landscape Strategy, Detailed Soft Landscape Plan and European Protected Species Mitigation Strategies (Including Derogation Licensing)** – Detailed mitigation strategies for bats will be prepared to inform an European Protected Species (EPS) Development Licence application should planning consent be forthcoming and will set out the recommended compensation, mitigation and enhancement measures to be implemented as part of the proposals, and to ensure no significant negative effects will arise upon the favourable conservation status of EPS species following occupation. This will be further supported by the Landscape Strategy and Detailed Soft Landscape Plan submitted with the planning application which includes the post-construction management

during the hours between dusk and dawn, with directional and low-level lighting used away from sensitive habitat corridors to mitigate effects relating to increased use of artificial lighting.

H6.12 This will be combined with the provision of new tree, hedgerow and shrub planting to compensate for tree loss, combined with the buffering of such habitats from development.

**Species IEFs**

H6.13 Protection of species during construction will be ensured through the provisions of the CEMP and relevant NRW development licences in respect of bats, where required. As a general measure aimed at protecting species, 'tool box talks' will be provided by a suitably qualified ecologist to the principal contractor appointed by the developer, for distribution to all employees involved in any enabling works/vegetation clearance, to ensure that identification and protection of the relevant species and their habitats is understood prior to commencement.

H6.14 Construction activities will be limited to daylight hours as far as possible to minimise disturbance to foraging and commuting habitats of value to bats and birds, and the use of lighting restricted. Where this is not possible (i.e. for security purposes) lighting will be directional, timed and low-lux, with internal/external shields installed as necessary to ensure minimal light spillage upon retained habitats, both within and adjacent to the development edge. Timed lighting will be programmed to ensure adequate dark periods between dusk and dawn across the EIA site, particularly adjacent to peripheral vegetation.

H6.15 In addition to the habitat protection measures described above, which will deliver much of the necessary species protection, further measures for each species group are summarised below.

**Breeding Birds**

H6.16 Retained bird nesting habitats will be included within Ecological Protection Zones (EPZs). This is considered to ensure the avoidance of impacts upon the local breeding bird assemblage given their likely association with those habitats retained including woodland, scrub and tree.

H6.17 Given the protection afforded to all breeding birds, their nests, eggs and young, sensitive vegetation clearance (and building demolition) required during the pre-construction and construction phases of development should be timed to avoid the main bird breeding season (i.e. March to August inclusive). Should this seasonal constraint prove impracticable, then vegetation clearance/building demolition outside of this period should only commence following the advice and under supervision of a suitably qualified ecologist. Pre-commencement checks for active nests will be required prior to any vegetation clearance occurring during the main bird breeding season, with appropriate buffers marked out around active nests or nests under construction, until all eggs have hatched and chicks fledged. Such protection measures in relation to breeding birds should be included within the CEMP prepared for the EIA site.

**Bats**

H6.18 Retained trees with bat roost potential will be included within EPZs throughout construction. Where trees with bat roost potential are to be lost to/impacted by development, in the absence of roosting bats, a development licence from NRW will not be required. Nevertheless, due to the transitory nature of tree roosting bats in particular, precautionary measures are required. Specifically, an update aerial inspection of bat roosting features previously identified will be undertaken by a suitably qualified and NRW bat licensed ecologist and/or arboricultural contractor, and within no more than 48 hours of works. Should a bat roost be confirmed within any trees to be impacted by the proposals, then a development licence from NRW will be required prior to works commencing, with sufficient replacement roosting habitat provided. Where no roosts are found but bat roosting potential remains, such trees should be subject to a

More specifically, sensitive displacement of individuals through phased vegetation clearance of the EIA site under an ecological watching brief will be undertaken where required, with the timing of such activities ideally confined to the period late March-early October inclusive so as to avoid the reptile hibernation season.

## During Operation

H6.24 Detailed ecological management prescriptions for the long-term management of newly created and enhanced habitats have been provided within a Landscape Strategy and Detailed Soft Landscape Plan for the EIA Site to be submitted with a planning application and provided at Appendix H3 and h4 respectively. The Landscape Strategy and detailed Soft Landscape Plan will define the ecological management prescriptions for habitats to be retained and/or created including trees, shrub and grassland habitats and with respect to their establishment and management for the lifetime of the development, to compensate for proposed habitat loss across the EIA site and further mitigate for potential operational impacts.

H6.25 The monitoring of bat boxes/features (including trees with bat potential, and bat features incorporated into building design), will furthermore be undertaken in accordance with derogation licence(s) where appropriate.

### Designated Sites

H6.26 In respect of statutory and non-statutory designated sites, development will be implemented in accordance with a sensitive design strategy to mitigate against negative effects arising from alterations to groundwater and surface water flow due to unforeseen pollution incidents. Subject to the above, it is considered that there will be no negative indirect effects to water quality caused by the proposed development of the EIA site.

H6.27 In addition to the above, significant negative effects upon designated sites arising from increased levels of recreational usage following occupation of the proposed development will be mitigated in a number of ways, including:

- The retention and enhancement of the vast majority of grassland habitat within the north-east corner of the EIA site to be delivered for amenity and wildlife with pedestrian links and natural play areas located within this area and the wider development footprint itself;
- The retention of smaller areas of amenity grassland and tree/shrub planting within the west and south of the EIA Site to be enhanced for wildlife with inclusion of pedestrian links through such habitats;
- The retention of green open space and pedestrian links at the frontage of the main building in the centre of the EIA Site; and
- The provision of formal landscaping and tree planting across the development footprint itself.
- The appropriate maintenance and long-term management of public rights of way running through the EIA site, to include the provision of litter and dog bins and gates where appropriate; and
- The retention of the former playing field within the south-west of the EIA site as formal public open space for recreation with delivery of a Locally Equipped Area of Play (LEAP).

**Species IEFs**

H6.36 That habitat creation, enhancement measures described above in relation to designations and habitat IEFs will compensate for proposed habitat loss across the EIA site and, furthermore, enhance opportunities for breeding, refuge, and/or dispersal of protected species to ensure the maintenance of their favourable conservation status over the long-term.

H6.37 In addition, the scheme will also ensure the implementation of a sensitive lighting strategy, enabling the provision of key dark corridors across the EIA site necessary to maintain dispersal, commuting and foraging routes across the EIA site to the wider landscape. Such a strategy would ensure that permanent lighting is reduced as far as possible along such key wildlife corridors to be retained, strengthened and created, including along the eastern boundary of the EIA site. Where lighting is required along road/pedestrian routes adjacent, lighting columns should be sited within the development footprint itself and directed away from habitat edges to minimise disturbance and light spill. Lighting should include directional, timed and/or low-lux lighting, utilising internal/external shields and/or hoods where required. Such measures can be secured via planning condition attached to any future consent.

H6.38 Additional species-specific measures to minimise operational impacts and provide enhanced opportunities for species breeding and refuge are detailed below.

**Birds**

H6.39 Durable bird boxes, including a range of designs to suit different species, are recommended and should be erected on retained mature trees and buildings.

H6.40 It is recommended that the planting scheme for the EIA site includes fruit bearing species that will provide a foraging resource throughout the year.

**Bats**

H6.41 New bat roosting features will be provided across the EIA site to compensate for the loss of roosts associated with B1/B2, B3/B4 and B16 and further enhance the development for roosting bats. Schwegler bat boxes should be installed upon suitable, mature trees retained along the peripheries of the EIA site and erected with a south-east/south-west facing aspect where possible and away from sources of artificial lighting. Bat box design to be installed across the EIA site should include 2F for smaller bats and 2FN for larger bats (or similar).

H6.42 Bat roost features (such as bat tubes/bricks and/or raised ridge/roof tiles), should also be incorporated into the exterior of buildings (such as garages) where possible.

H6.43 Additional planting of native species will be incorporated into the scheme. This will include night-scented plants such as honeysuckle, as well as a mixture of flowering plants which will flower throughout the year.

**Reptiles**

H6.44 That habitat creation, enhancement measures described above in relation to designations and habitat IEFs will compensate for proposed habitat loss across the EIA site and, furthermore, enhance opportunities for common reptiles and a resident slow-worm population.

H6.45 This will be in addition to creation of formal hibernaculum within the north-east corner of the EIA site to provide additional hibernation opportunities for reptiles and enhance the site for this group more generally.

| | | | | |
|---|---|---|---|---|
| | could transfer downstream to the River Usk and Severn Estuary. | | methodologies and pollution prevention guidelines set out within the CEMP.. Further protection will be afforded through implementation of a sensitive drainage strategy. | |
| Semi-natural Broadleaved Woodland (Local value) | Habitat degradation and damage during construction and landscaping works leading to physical impacts to tree roots. | Negative, permanent, irreversible (Local level) | The construction phase will adhere to sensitive working methodologies including the implementation of protective fencing and pollution prevention guidelines t set out within the CEMP to ensure full protection of the valued resource. | Negligible |
| | Disturbance impacts due to elevated noise and lighting. | Negative, temporary, reversible (Site level) | Construction activities will be restricted to daylight hours as far as possible, with use of temporary, artificial lighting to avoid the hours between dusk and dawn, with directional and low-level lighting used away from sensitive habitat corridors. | Negligible |
| Scattered Trees (Local value) | Loss of mature and semi-mature tree standards G18, T39 and T100 with TPOs. | Negative, permanent, irreversible (Local) | Provision of new tree, hedgerow and shrub planting to compensate for habitat loss. Translocation of trees to be removed to retained receptor areas where appropriate. | Negligible |
| | Habitat degradation and damage during construction and landscaping works leading to physical impacts to tree roots. | Negative, permanent, irreversible (Local level) | The construction phase will adhere to sensitive working methodologies including the implementation of protective fencing and pollution | Negligible |

| | | | | |
|---|---|---|---|---|
| | demolition. | | valued resource. Provision of new, compensatory roosting features. | |
| | Loss of trees T100 and T105 with moderate bat roost potential and T91 and, T97 low bat roost potential. Risk of killing and injury during tree works should a bat roost be present. | Negative, permanent, irreversible (local level) | Provision of new tree, hedgerow and shrub planting to compensate for tree loss, together with habitat buffering. Re-inspection of trees with bat potential together with sensitive clearance measures (which may require implementation under a derogation licence to be approved by NRW), will be followed to ensure no harm to roosting bats. | Negligible |
| | Habitat degradation and damage during construction and landscaping works adjacent to retained habitats and trees with bat roost potential. | Negative, permanent, irreversible (Local level) | Protective measures to be set out within the CEMP will ensure no adverse impacts to retained habitats will arise which could affect bats. | Negligible |
| | Indirect disturbance (light spill, visual and noise) of habitats. | Negative, intermittent, temporary, reversible (Site level) | Protection of habitats and sensitive timing of works as detailed within the CEMP. Management and maintenance of new planting in line with a detailed landscape strategy. Restrict construction activities to daylight hours as far as possible, with use of temporary, artificial lighting to avoid the hours between dusk and dawn, with directional and low-level lighting used away from sensitive habitat corridors. | Negligible |

## During Operation

H7.3 It is considered that the mitigation measures outlined above would result in residual effects anticipated during the operational phase to have been reduced to negligible levels. Furthermore, the creation of new habitats may also result in a biodiversity gain.

H7.4 In light of the mitigation proposed, all remaining potential effects on the IEFs identified within the assessment are considered negligible, as summarised within Table H7.2 below.

Table H7.2 Residual Ecology Effects During Operation

| Receptor | Nature of Effect | Sensitivity/ Significance/ Magnitude with Inherent Mitigation | Additional Mitigation Measure(s) | Residual Effect Sensitivity/ Significance/ Magnitude After Mitigation |
|---|---|---|---|---|
| Severn Estuary SAC/SPA/Ramsar (International value) | Surface / ground water run-off and pollution of the Afon Llwyd which could transfer downstream to the River Usk and Severn Estuary. | Negligible | Protection through sensitive drainage strategy in accordance with local and national policy. | Negligible |
| | Disturbance arising from an increase in recreational pressure following construction of up to 218 dwellings. | Negligible | Retention of grassland within the north-east corner and southern boundary of the site for amenity and wildlife, in addition to retention of green open space to the frontage of the main central building and existing landscaped areas in the west. Retention of the former playing field. | Negligible |
| River Usk SAC/SSSI (European value) | Surface/ground water run-off and pollution of the Afon Llwyd which could transfer downstream to the River Usk and Severn Estuary. | Negligible | Protection through sensitive drainage strategy in accordance with local and national policy. | Negligible |
| | Disturbance arising from an increase in recreational pressure following construction of up to 218 dwellings. | Negligible | Retention of grassland within the north-east corner and southern boundary of the site for amenity and wildlife. Reinstatement of the former playing | Negligible |

| Receptor | Nature of Effect | Sensitivity/ Significance/ Magnitude with Inherent Mitigation | Additional Mitigation Measure(s) | Residual Effect Sensitivity/ Significance/ Magnitude After Mitigation |
|---|---|---|---|---|
| Breeding birds (Site value) | Indirect disturbance of nesting and foraging habitats through light spill, noise and visual disturbance. | Negligible | Habitat buffering. Disturbance avoidance including sensitive lighting strategy and management and maintenance of new planting in line with the landscape strategy and detailed soft landscape plan. Provision of bird boxes where appropriate. | Negligible, possible minor beneficial with appropriate landscaping |
| | Predation by cats. | Negative, irreversible, permanent (Site level) | Habitat buffering. Disturbance avoidance including sensitive lighting strategy and management and maintenance of new planting in line with the landscape strategy and detailed soft landscape plan. Provision of bird boxes where appropriate. | Negligible, possible minor beneficial with appropriate landscaping |
| Roosting/ foraging/ commuting bats (Local value) | Indirect disturbance (light spill, visual and noise) (Permanent effect). | Negative, permanent, irreversible (Local level) | Habitat buffering. Disturbance avoidance including sensitive lighting strategy and management and maintenance of new planting in line with the landscape strategy and detailed soft landscape plan. Provision of bat boxes for installation upon trees, in addition to roost features to be integrated into buildings. | Negligible |

# H8.0 Summary & Conclusions

H8.1 This chapter provides an assessment of the significance and consequences of potential ecological effects upon identified IEFs arising from the proposed demolition (in part) and redevelopment of UWS Caerleon for residential development and has been prepared as part of an ES that accompanies a detailed Planning Application for residential purposes.

H8.2 Avoidance, mitigation and compensation measures have been prepared as part of a holistic ecology strategy for the proposed development to address any potential significant effects that may arise during the construction (including demolition and remediation works) and operational phases of the proposed development. Additional measures to further ensure all residual effects are avoided, mitigated and compensated for, in addition to further enhancements recommended to enable the proposed development to deliver positive ecological gain, is also discussed.

H8.3 Further baseline information in support of this chapter is included within Technical Appendix H1 and is referred to throughout the assessment. The approach taken in this assessment is made with reference to the guidelines published in 2018 by the Chartered Institute of Ecology and Environmental Management (CIEEM).

H8.4 The baseline survey work has identified the following IEFs pertinent to the proposed development:

- Severn statuary Ramsar/SPA/SAC;
- River Usk SAC/SSSI;
- Afon Llwyd SINC and Afon Llwyd Grasslands SINC;
- Semi-natural Broadleaved Woodland;
- Scattered Trees;
- Breeding Birds;
- Roosting Bat Assemblage;
- Foraging/Commuting Bat Assemblage; and
- Common Reptiles.

H8.5 The impact assessment has identified that certain actions could result in significant adverse effects on these IEFs without mitigation. Inherent avoidance, mitigation and compensation measures to be delivered through the detailed design of the proposals, including a pollution prevention strategy and sensitive drainage scheme, in addition to the implementation of a the Construction and Environmental Management Plan (CEMP) and Landscape Strategy are considered to ameliorate those significant effects identified to a residual level where no significant negative effects are likely, but where significant beneficial effects could be delivered with respect to biodiversity gain.

H8.6 A summary of those activities during the construction and operational phases of the development impacting upon identified IEFs, including the characterisation of the unmitigated effect, the proposed mitigation, enhancement and, where necessary, compensation mechanism should any residual effects remain, are provided within Tables H7.1 and H7.2. Based on the impact assessment and consideration of the IEFs, it is concluded that the proposals will conform to the respective legislative protection afforded to these IEFs and with respect to national, regional and local planning policy requirements.

# H10.0 References


1 Amphibian and Reptile Groups of the United Kingdom (2010). ARG UK Advice Note 5: Great Crested Newt Habitat Suitability Index.

2 Battersby. J. (Ed) & Tracking Mammals Partnership. (2005) UK Mammals Species Status and Population Trends. First Report by the Tracking Mammals Partnership. JNCC/Tracking Mammals Partnership, Peterborough http://monmouthshirebatgroup.org/Bats-in-Monmouthshire.php

3 Bat Conservation Trust, 2018. The National Bat Monitoring Programme. Annual Report 2017.

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

5 CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal, 2nd edition. Chartered Institute of Ecology and Environmental Management. Winchester.

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

7 Froglife (1999). Froglife Advice Sheet 10: reptile survey. Froglife, London.

8 Harris S, Cresswell P and Jefferies D (1989). *Surveying Badgers*. Mammal Society.

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

10 Mitchell-Jones AJ (2004). *Bat Mitigation Guidelines*. English Nature

11 National Badger Survey: The history, distribution, status and habitat requirements of the Badger in Britain

# Contents

**Executive Summary**

**Section 1** Introduction, Purpose and Context ..... 1

**Section 2** Methodology (Update Baseline Investigations) ..... 5

**Section 3** Results (Baseline Conditions) ..... 11

**Section 4** Summary of Findings ..... 23

# Appendices

**Appendix EDP 1** Proposed Site Plan
(Powell Dobson Architects, October 2019; Drawing Reference: 18137(05)101)

**Appendix EDP 2** Proposed Landscape Strategy
(edp5601_d016e 29 November 2019 DB/DL)

**Appendix EDP 3** International Statutory Designated Sites

**Appendix EDP 4** National Statutory and Non-statutory Designated Sites

**Appendix EDP 5** Habitat Descriptions

**Appendix EDP 6** Bat Survey Results

**Appendix EDP 7** Habitat Suitability Index Results

**Appendix EDP 8** Reptile Survey Results

# Plans

**Plan EDP 1** Update Habitat Survey, June 2019
(edp5601_d002a 17 July 2019 GY/EM)

**Plan EDP 2** Trees Roost Assessment Results
(edp5601_d001b 17 October 2019 GY/LL)

**Plan EDP 3** Bat Roost Building Inspection and Roost Characterisation Survey Results
(edp5601_d005b 22 August 2019 LB/LL)

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assessment is provided within Chapter H of the ES provided by EDP and submitted with a planning application.

details of the proposals are provided within the documents submitted along with the planning application.

1.8 The Application Site was subject to a previous planning application for residential development (Application Ref: 17/0781), but which was refused by Newport City Council (NCC) in light of significant adverse effects upon highway safety, traffic, residential amenity and air quality.

1.9 The ecological sensitivities of the Application Site have influenced the final layout through an iterative design process. Thus, the final Site Plan incorporates a degree of 'inherent' mitigation to avoid or reduce the severity of potential ecological impacts.

**Background and Scope**

1.10 To inform the previous planning application submission, as referred to above, detailed ecological assessments of the Application Site were previously undertaken by Tyler Grange in 2015 and Ecosulis during 2015 and 2016, as summarised below:

- Preliminary Ecological Appraisal report by Tyler Grange in 2015 (Report reference: 2447_R01_SC_KB_AR), including an Extended Phase 1 habitat survey;

- Bat Habitat Suitability Assessment, Bat Activity Surveys, Reptile Presence Absence report by Ecosulis in October 2015 (Report reference: J005876), including a bat habitat suitability assessment, bat emergence survey, bat activity surveys and reptile surveys, undertaken in September to October 2015; and

- Ecological Impact Assessment Technical Appendix I: Baseline Ecology Report by Ecosulis in January 2017 (Report reference: J006171), including the above, along with the findings of additional bat emergence/ e-entry surveys in May-June 2016 and an internal inspection of Camelot/Dolaucothi accommodation block in October 2016.

1.11 The findings of such work have been updated by EDP during 2019 to determine any material changes to those habitats and protected/notable species supported by the Application Site. Update surveys included an Extended Phase 1 Habitat survey and further detailed surveys with respect to bats and common reptiles.

1.12 This Ecology Baseline Report details the findings of the update baseline investigations undertaken by EDP in 2019 to date and assesses the current ecological status of the Application Site necessary to determine/confirm potential ecological constraints to its proposed development.

1.13 The remainder of this report is structured as follows:

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

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2.6 The distribution of pertinent designations around the Application Site is illustrated at **Appendices EDP 3** and **4** and specifically referenced within **Section 3** of this report.

**Update Extended Phase 1 Survey**

2.7 An Extended Phase 1 Habitat survey was initially undertaken by Tyler Grange in 2015 and subsequently reported by Ecosulis. To update the ecological baseline and verify the results of previous survey effort, an Update Extended Phase 1 Habitat survey was undertaken by EDP on 9 May 2019.

2.8 The survey technique adopted for the update habitat assessment was at a level intermediate between a standard Phase 1 survey technique[5], based on habitat mapping and description, and a Phase 2 survey, based on detailed habitat and species surveys. The survey technique is commonly known as an Extended Phase 1 survey. This level of survey does not aim to compile a complete floral and faunal inventory for the Application Site.

2.9 The level of survey involves identifying and mapping the principal habitat types and identifying the dominant plant species present in each principal habitat type. In addition, any actual or potential protected species or species of principal importance are identified and scoped.

2.10 The distribution of habitats surveyed is illustrated at **Plan EDP 1**, with habitat descriptions included within **Appendix EDP 5**.

***Limitations***

2.11 May is within the optimal season for undertaking an Extended Phase 1 Habitat survey. The survey is, therefore, not considered to be constrained by climatic or seasonal factors.

2.12 Surveys were limited to recording plant species present in both vegetative and floristic forms at the time of survey. The absence of any species recorded during the survey cannot be taken to automatically infer species' absence from the Application Site.

**Detailed (Phase 2) Surveys**

2.13 The scope of the additional Phase 2 surveys undertaken at the Application Site was defined following the completion of the Update Extended Phase 1 Habitat survey in May 2019 and review of previous survey findings collated by Ecosulis in 2015 and 2016. The surveys 'scoped in' are summarised in turn below, with a brief explanation of those potential surveys 'scoped out' provided thereafter.

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

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

*Limitations*

2.18 Badger surveys can be undertaken at any time of year and are, therefore, not limited by seasonal or climatic factors.

***Amphibians (including Great Crested Newt)***

*Habitat Suitability Index Assessment*

2.19 A Habitat Suitability Index (HSI) assessment, as developed by Oldham *et al*. (2000)[7], was completed to assess the suitability of an onsite garden pond to support great crested newt (*Triturus cristatus*). The survey was undertaken during the Extended Phase 1 Habitat survey on 9 May 2019. The HSI assessment follows a standardised assessment criteria using habitat features such as water quality, fish/waterfowl presence and surrounding terrestrial habitat quality to derive a suitability score, or 'index'. Water bodies with high scores are considered more likely to support great crested newts compared to those with lower scores. HSI scores and the inferred suitability of the ponds assessed to support great crested newts are described within **Table EDP 2.1**.

**Table EDP 2.1**: HSI Scores and Inferred Pond Suitability.

| HSI Score | Pond Suitability to Support Great Crested Newts |
|---|---|
| <0.5 | Poor suitability |
| 0.5–0.59 | Below average suitability |
| 0.6–0.69 | Average suitability |
| 0.7–0.79 | Good suitability |
| >0.8 | Excellent suitability |

***Reptiles***

2.20 Overall the Application Site is considered to of low value to common reptile species, being comprised predominantly of hardstanding, buildings and amenity grassland. Suitable habitat comprising unmanaged grassland and dense scrub is however, present within the north-east corner and along the southern boundary of the Application Site.

2.21 To determine the presence/likely absence of reptile species within the Application Site, along with their distribution and approximate population size if present, a reptile survey was

[7] Oldham R.S., Keeble J., Swan M.J.S. & Jeffcote M. (2000). *Evaluating the suitability of habitat for the Great Crested Newt* (Triturus cristatus). Herpetological Journal 10 (4), 143-155

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| Designation | Distance from Application Site (approx.) | Brief Description |
|---|---|---|
| ***European Designations with 10km*** | | |
| Severn Estuary SPA | 7.3km south | This SPA is designated for supporting populations of European importance, overwintering Bewick's swan (*Cygnus columbianus bewickii*) and migratory curlew (*Numenius arquata*), dunlin (*Calidris alpina*), pintail (*Anas acuta*), redshank (*Tringa tetanus*) and shelduck (*Tadorna tadorna*). The site also supports a population of European importance of passage ringed plover (*Charadrius hiaticula*) and is a wetland of international importance. |
| Severn Estuary SAC | 7.3km south | This SAC is designated for its assemblage of Annex I habitats including: estuaries; mudflats and sandflats not covered by seawater at low tide; and Atlantic salt meadow. Also, a qualifying feature are its populations of twaite shad (*Allosa fallax*), sea lamprey (*Petromyzon marinus*) and river lamprey (*Lampetra fluviatilis*). |
| River Usk SAC | 1.1km south and east | The SAC is designated as a watercourse of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation, an Annex I habitat. The site is also designated for populations of sea lamprey, river lamprey and brook lamprey (*Lampetra planeri*), twaite shad, Atlantic salmon (*Salmo salar*), bullhead (*Cottus gobio*) and otter (*Lutra lutra*). |
| ***Site of Special Scientific Interest (SSSI) within 2km*** | | |
| River Usk SSSI | 1.1km south and east | A watercourse designated for its aquatic habitats and associated flora and fauna. |

***Non-Statutory Designations***

3.5 Non-statutory designations are also commonly referred to in planning policies as 'local sites', although in fact these designations are typically considered to be of importance at a county level. In Newport, such designations are named Sites of Importance for Nature Conservations (SINCs). Additional designated sites which should be considered at this level include Local Nature Reserves (LNRs) and Ancient Semi Natural Woodland (ASNW), where these are not covered by other designations.

3.6 No part of the Application site is covered by any non-statutory designations. However, there are 11 SINCs and 6 ASNWs within the Application Site's potential zone of influence as described in **Table EDP 3.2** and illustrated at **Appendix EDP 4**.

illustrated on **Plan EDP 1**. In addition, detailed descriptions of these habitat types are provided in **Appendix EDP 5**. A summary, and qualitative assessment, of these habitats is provided in **Table EDP 3.3**.

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

| Habitat/Feature | Distribution within Application Site | Intrinsic ecological value |
|---|---|---|
| Buildings and Hardstanding | Dominates the Application Site. | **Negligible**, owing to man-made structure *per se*, albeit with potential to support protected species. |
| Former Amenity Grassland | Located throughout the Application Site in association with landscaped areas. | **Negligible**, owing to fragmented nature with discrete areas surrounded by hardstanding. Low distinctiveness and botanical diversity. |
| Poor Semi-improved Grassland | Located within the north-east corner of the Application Site. | **Site**, of similar botanical diversity to amenity grassland but contiguous with other habitat types including broadleaved woodland. |
| Semi-natural Broadleaved Woodland (Offsite) | Delineates the eastern boundary of the Application Site. | **Local,** a Habitat of Principal Importance. |
| Shrub Planting | Landscaped areas comprising shrub planting scattered across the Application Site. | **Negligible**, owing to limited extent, low species diversity and dominance by non-native species. |
| Scattered Trees | Located throughout the Application Site. | **Local**, owing to maturity, potential to support protected species and TPO's assigned to several of the trees. |
| Dense and Scattered Scrub | Predominantly scattered along the boundaries of the Application Site. | **Negligible**, owing to limited extent and species diversity. |
| Standing Water | A small, artificial pond is present within the south-east corner of the Application Site. | **Site**, owing to artificial nature and poor water quality. |
| Tall Ruderal Vegetation | Predominantly established across former allotments adjacent to the eastern boundary of the Application Site. | **Negligible**, owing to limited extent and species diversity. |
| Ephemeral/Short Perennial Vegetation | Scattered patches present across disused car parking areas and hardstanding. | **Negligible**, owing to limited extent and species diversity. |

### Protected and/or Notable species

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

pipistrelle, brown long-eared, *Myotis sp*. and noctule (*Nyctalus noctula*) bats were recorded within 2km of the Application Site more generally.

3.15 With respect to Annex II bats, SEWBReC returned two records of greater horseshoe bat (*Rhinolophus ferrumequinum*), including a night roost record in 2016 at 4.2km north north-west of the Application Site, and another record from 2017, 7.9km south-west of the Application Site. Furthermore, 75 records of lesser horseshoe bat (*Rhinolophus hipposideros*), including 60 records of roosts, dating from 2000 to 2018 were returned from within the 6km search radius. No records were returned from the Application Site, with just two records identified within a 2km search area, including a lesser horseshoe night roost 1.98km north-east of the Application Site.

*Investigations of Bat Roosting – Trees*

3.16 A ground level assessment of the trees within the Application Site for potential to support roosting bats was undertaken by Ecosulis in 2015 during which two trees with potential to support roosting bats were identified. The rest of the trees across the Application were deemed to have negligible potential to support roosting bats as they lacked any features and were immature to semi-mature.

3.17 All the trees across the Application Site were subject to an update ground level assessment by a suitably qualified ecologist from EDP in May 2019 for the presence of, or potential to support, roosting bats. Trees were searched as thoroughly as possible from ground level, with all elevations covered where accessibility allowed.

3.18 During the update ground level assessment completed by EDP, one tree (**T100**) was considered to have high potential, thirteen (**T16**, **T48**, **T60**, **T61**, **T90**, **T97**, **T105**, **T23.2**, **T23.5**, **T23.6**, **T23.7**, **T7.1**, **T7.2**) were considered to have moderate potential, and a further nine trees (**T7.3**, **T23.1**, **T23.3, T23.**4 **T53**, **T80**, **T91**, **T92**, **T94**) were considered to have low potential to support roosting bats. The remaining trees on site were assessed as having negligible potential. The findings of the tree assessment are summarised at **Appendix EDP 6**.

3.19 Of those trees with moderate-high potential to support roosting bats, four trees are to be felled to facilitate development (**T61**, **T97**, **T100** and **T105**). As such, further detailed aerial inspections of these trees were undertaken during September 2019 to confirm presence/infer absence of roosting bats. Following the first inspection undertaken on 3 September 2019 **T100** was downgraded from high to moderate potential to support roosting bats. **T105** was confirmed as being of moderate potential whilst **T97** was downgraded from moderate to low potential and **T61** from moderate to negligible potential. A second inspection of **T100** and **T105** was thus undertaken on 17 September 2019. No evidence of roosting bats was identified during survey effort. The findings of the aerial tree assessments are summarised at **Appendix EDP 6** and illustrated at **Plan EDP 2**.

3.26 The results of the internal and/or external inspections of the buildings located within the Application Site are illustrated on **Plan EDP 3**. A description of each building and their value for roosting bats is summarised within **Appendix EDP 6**.

Dusk Emergence/Dawn Re-entry Surveys

3.27 Dusk emergence and/or dawn re-entry surveys of buildings **B1/B2, B3/4, B5-B7** and **B10-15** with bat roost potential have been undertaken by EDP between June and August 2019.

3.28 During a dusk emergence survey of building **B3** on 24 June 2019, three common pipistrelle bats were identified emerging from a soffit box on the western elevation between 22:01 and 22:36. This is in addition to emergence of a single common pipistrelle bat from a soffit box on the western elevation of **B3** at 22:11.

3.29 A dusk emergence survey of **B3/B4** undertaken on 5 August 2019 identified two common pipistrelle bats emerging from the soffit box near the central gable end of the eastern elevation at 21:30 and 21:40 in addition to one common pipistrelle emerging at 21:29 from a second location.

3.30 During a dusk emergence survey of **B1/B2** on 25 June 2019, a single common pipistrelle emerged from the soffit box on the western elevation at 22:26 whilst a possible re-entry of a common pipistrelle bat was recorded during a dawn re-entry survey on 18 July 2019 at 04:05. A single common pipistrelle bat was also observed emerging from the soffit box along the south-eastern corner of **B2** during a second dusk emergence survey.

3.31 With respect to **B16**, a single common pipistrelle was recorded entering a roosting feature within the eaves on the northern elevation of the building at 22:01 on 25 June 2019. On 5 August 2019, a soprano pipistrelle bat was also observed emerging from building **B16** at 21:11 specifically from a crevice located above a window lintel.

3.32 Based on the results, it is considered that buildings **B1/B2, B3/4** and **B16** each support a summer day roost for low numbers of common pipistrelle bats. **B16** also supports a summer day roost for low numbers of soprano pipistrelle bats. Both **B1/B2** (Camelot/Dolaucothi accommodation block) and **B16** (Felthorpe House) have previously been confirmed as supporting roosts for common pipistrelle and presumed *Myotis* bat species following detailed survey effort undertaken by Ecosulis in 2016. *Myotis* bat species were not recorded roosting within **B1/B2** during surveys undertaken by EDP in 2019.

3.33 The dusk emergence and dawn re-entry survey results of the buildings located within the Application Site are illustrated on **Plan EDP 4** and **Plan EDP 5**.

*Investigations of Bat Foraging/Commuting Activity*

3.31 The results of the update bat activity surveys comprising walked transect and automated detector surveys undertaken between April and August 2019 are detailed at **Appendix EDP 6**. The approximate distribution and diversity of bat species recorded during the transect surveys is illustrated on **Plans EDP 7a-7d**.

***Dormouse***

3.40 SEWBReC returned 30 records for dormouse within 2km of the Application Site. All of the records originate from the eastern side of the River Usk with the Application Site being located on the western side of the River Usk.

3.41 Suitable dormouse habitat onsite is limited to dense scrub and woodland delineating the eastern boundary of the Application Site. Such features are, however, highly fragmented across the Application Site with no/limited connectivity to suitable habitat in the wider landscape. Although a desk study returned records of dormouse within 2km of the Application Site, such recored are located beyond the River Usk which is considered a barrier to the dispersal of dormouse between the Application Site and wider landscape.

3.42 This species is thus presumed absent from the Application Site and considered to be of **Negligible** importance.

***Otter and Water Vole***

3.43 A desk study returned several records for otter associated with the Afon Llwyd 400m north of the Application Site and River Usk east and south of the Application Site. With respect to water vole, only one record within 2km of the Application Site was returned circa 1.9km north.

3.44 There is no suitable habitat for either species onsite or adjacent such that both species are presumed absent and considered of **Negligible** importance.

***Great Crested Newt***

3.45 A desk study assessment returned six records of great crested newt within 2km of the Application Site. The two most recent records were located 800m south-east of the Application Site and dated from 2011 and 2012. This is in addition to records for common frog (*Rana temporaria*), common toad (*Bufo bufo*) and smooth newt (*Lissotriton vulgaris*), the closest of which are within 410m south of the Application Site.

3.46 A single waterbody was identified within the south-east corner of the Application Site, but which was considered unsuitable for great crested newt due to its artificial nature, poor water quality and limited macrophyte diversity. The habitat suitability assessment confirmed the pond to be of poor suitability to support great crested newt. Detailed results of the habitat suitability assessment are provided at **Appendix EDP 7**. An additional waterbody was identified within 500m of the Application Site (370m south-west). However, this waterbody is located beyond a main road and residential development which is considered a barrier to the dispersal of great crested newt.

3.47 Terrestrial habitat onsite limited to amenity/poor semi-improved grassland and dense scrub is considered of limited suitability for this species and further patchy in its distribution, fragmented by buildings and hardstanding. Existing development surrounding the Application Site is considered a barrier to the dispersal of great crest newt between the Application Site

small pearl bordered fritillary (*Boloria selene*) greater than 2km south and north of the Application Site respectively. Other records related to shrill carder bee (*Bombus sylvarum*) and grayling (*Hipparchia semele*), both red data book species whilst large wainscot (*Rhizedra lutosa*), identified within the wider area of Caerleon is a species of Principle Importance.

3.54 The Application Site is considered of limited importance to an invertebrate assemblage with dense scrub, amenity/poor semi-improved grassland and buildings and hardstanding likely to support a limited assemblage of common and widespread species only. The local invertebrate assemblage potentially supported by the Application Site is therefore considered to of **Negligible** importance.

3.55 With respect to notable plant species, records are largely limited to bluebell (*Hyacinthoides non-scripta*) and deptford pink (*Dionthus armeria*) (both listed under Schedule 8 of the Wildlife and Countryside Act 1981 (as amended)) and recorded in association with woodland units in the wider landscape. Records for tubular water dropwort (*Oenanthe fistulosa*), marsh stitchwort (*Stellaria palustris*), yellow bird's nest (*Monotropa hypopitys*) and the lichen species *Parmelina carporrhizans*, all red data book species were also returned. No notable plant species were recorded during the Extended Phase 1 Habitat survey, whilst habitats present within the Application Site are considered likely to support common and widespread species only.

| Important Ecological Feature | Key Attributes | Nature Conservation Value |
|---|---|---|
| Roosting Bat Assemblage | Confirmed presence of a common pipistrelle and soprano pipistrelle roost within onsite buildings during 2019. Other buildings with present with potential to support bat roosts. | Local |
| Foraging/ Commuting Bat Assemblage | Six bat species/species groups (myotid bat species were not identified to species level) in low numbers typical for the locality, with an assemblage dominated by common pipistrelle. | Local |
| Badger | Suitable foraging habitat present onsite whilst adjacent woodland offers suitable cover and set building opportunities. | Site |
| Common reptiles | Small slow-worm population within north-east corner of the Application Site. | Site |
| Notable Mammal Species | European hedgehog confirmed present onsite with habitats offering suitable opportunities for this species, in addition to stoat and polecat. | Site |

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# Appendix EDP 2
# Proposed Landscape Strategy
# (edp5601_d016e 29 November 2019 DB/DL)

**Landscape Strategy**

The redevelopment of the USW Caerleon site offers an exciting opportunity to retain and preserve the best of the existing landscape and trees, knitting these together with newly landscaped areas to create an accessible and varied network of spaces across the scheme and connections to the landscape and townscape beyond.

The landscape strategy for the scheme seeks to integrate arboriculture, ecology, amenity, and SuDS provision, utilising some of the best existing areas of grassland and glades, improving and extending this character through the informal landscape areas across the site. At the heart of the scheme, the gardens forming the historic foreground to the main building will be renovated, reinstating their original formal character and enhancing this space for relaxation and tranquility. The rugby field area will be 're-wilded', with significant tree and meadow plantings creating a naturalistic feel while also maintaining a suitably large 'kick-about' space at its centre and providing a new Local Equipped Area for Play at its northern end. In the north east, the scheme seeks to capitalise on the topography and tree cover to create opportunities to enjoy framed views out to the east while also allowing residents to explore the more wooded character of this part of the site.

A number of key principles will drive the detailed design of the public realm:

- Better quality trees and shrubs will, where practical and appropriate, be retained or translocated to better locations (work has already been undertaken on this front with the Landscape Architects, Arboriculturist and NCC Tree Officer meeting on site to identify and agree which specimens would be moved);
- The scheme will seek to offer 3 distinct characters of landscaped space – formal, tranquil gardens around the central Listed Building; Informal naturalistic meadows and glades around the old rugby field and the pocket parks between new housing; and a shady wooded hillside trail in the north east;
- Throughout the site carefully selected framed views of the landscape beyond the site will be identified and created, enhancing the scheme's sense of place and the new communities sense of connection to the wider urban area;
- SuDS will be seamlessly integrated with the public open space and offer further biodiversity and aesthetic value through sensitive planting treatments and design;
- Plants will be selected to be suitable for the receiving environment and for micro-climate and soil conditions on site. Wherever possible species of native and/or wildlife value will be used and these will be sourced as locally as possible;
- The whole scheme will be carefully designed to be accessible to all and offer spaces and places at a variety of scales, types and character such that the whole community is catered for and can utilise the site landscape for recreation, exercise and relaxation. This will aim to encourage residents out of their homes, to engage with the landscape and the associated health benefits of doing so and to consider non-vehicular modes of transport for local journeys.


the environmental dimension partnership

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project title
**USW Caerleon**

drawing title
**Landscape Strategy**


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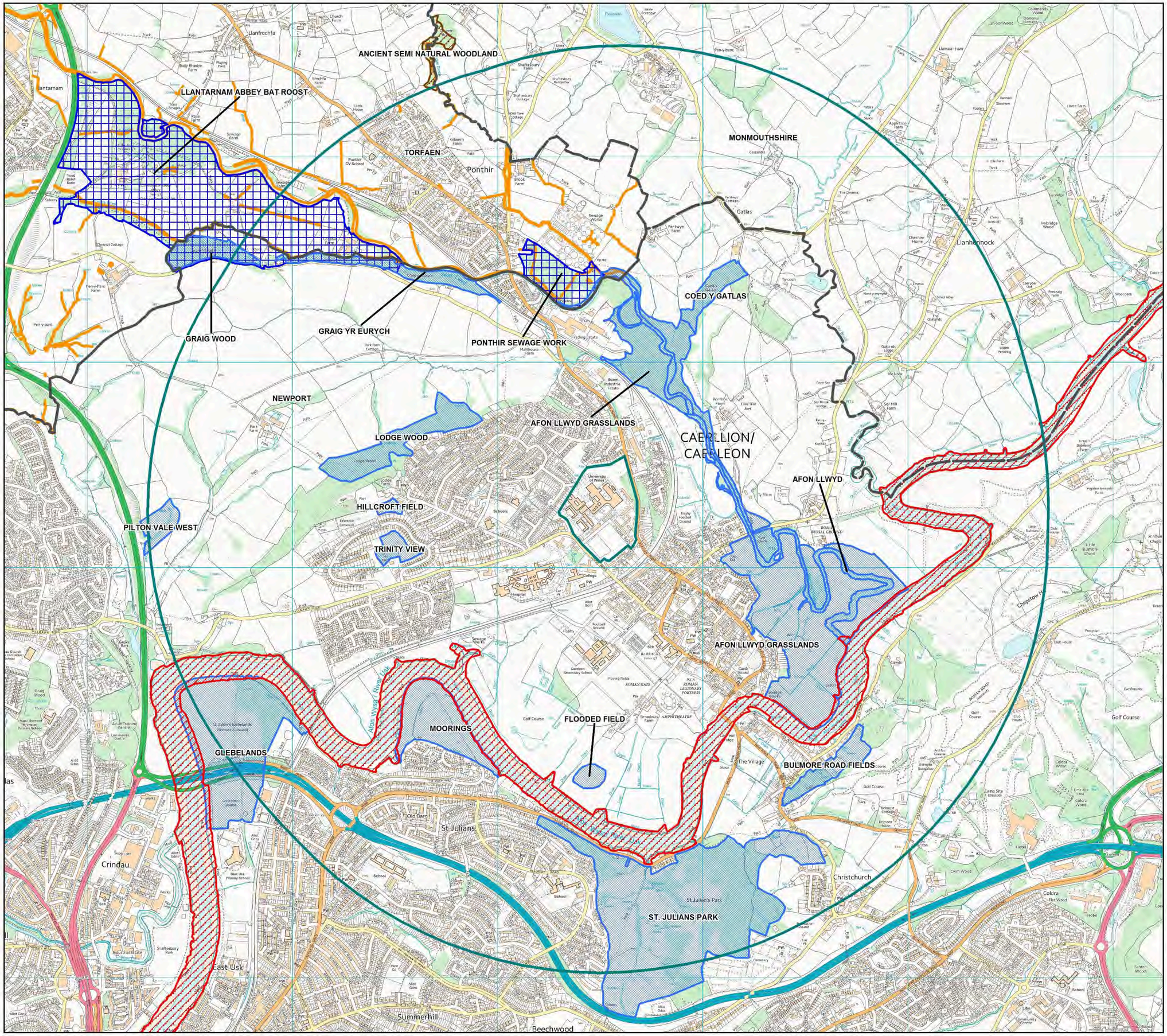
# Appendix EDP 4
# National Statutory and Non-statutory Designated Sites

# BIODIVERSITY INFORMATION SEARCH (SPECIES AND DESIGNATED SITES):

# CAERLEON UNIVERSITY CAMPUS ST3348891284




Search Area (plus 2km Search Buffer)

Site of Special Scientific Interest

Newport Site of Importance for Nature Conservation

Torfaen Site of Importance for Nature Conservation

Torfaen Site of Importance for Nature Conservation (Ancient Semi-Natural Woodland)

Torfaen Site of Importance for Nature Conservation (Watercourses)

Unitary Authority Boundary

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Plot produced on 08/05/2019 on behalf of EDP by

SEWBReC

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

***Former Amenity Grassland***

A5.9 Pockets of amenity grassland are located throughout the Application Site whilst a sport's pitch is present within the south of the Application Site. Such areas have predominantly fallen out of management and as such grassland habitat is relatively tall (0.3m high) and tussocky. Amenity grassland generally comprises false oat-grass (*Arrhenatherum elatius*), meadow foxtail (*Alopecurus pratensis*), cock's-foot (*Dactylis glomerata*) and Yorkshire fog (*Holcus lunatus*). Common vetch (*Vicia sativa*), creeping cinquefoil (*Potentilla repens*), forget-me-not (*Myosotis sp.*) and bird's-foot-trefoil (*Lotus corniculatus*) are locally frequent whilst germander speedwell (*Veronica chamaedrys*), daisy (*Bellis perenne*), yarrow (*Achillea millefoilum*), fescue (*Festuca sp.*), knapweed (*Centaurea nigra*), ribwort plantain (*Plantago lanceolata*) and broadleaved dock (*Rumex obtusifolius*) occur occasionally. Cuckoo flower is locally rare (*Cardamine pratensis*).

A5.10 Small individual patches of amenity grassland often vary in their composition and are sometimes dominated by a single species not otherwise recorded at the same abundance elsewhere across the Application Site, including bird's-foot trefoil, geranium (*Geranium sp.*), black medick (*Medicago lupulina*) and sedge (*Carex sp.*).

A5.11 Amenity grassland areas located within the centre of the Application Site are, in contrast, heavily manicured and subject to frequent mowing with limited species recorded within the sward.

A5.12 Overall, the grassland sward appears relatively diverse but given variations in its species composition often dominated by one species or another, it is considered likely that such habitats were seeded rather than occurring naturally. Amenity grassland is thus considered to be of **Negligible** importance.

***Poor Semi-improved Grassland***

A5.13 The north-eastern corner of the Application Site comprises poor semi-improved grassland sloping steeply downwards from an access road which delineates its south-western boundary towards the boundaries of residential gardens located offsite. Poor semi-improved grassland is unmanaged (up to 0.m tall) and tussocky. Species composition is similar to amenity grassland reported above although knapweed occurs more frequently. Bramble scrub is also encroaching across this habitat whilst bracken (*Pteridium aquilinum*) is present along the north-eastern boundaries with residential gardens.

A5.14 Given poor semi-improved grassland represents a large, continuous area of habitats contiguous with bramble scrub and broadleaved woodland, this habitat is considered to be of **Site** level importance.

***Semi-natural Broadleaved Woodland (Offsite)***

A5.15 The eastern boundary of the Application Site is contiguous with an area of mature broadleaved woodland dominated by mature and semi-mature ash and sycamore (*Acer pseudoplatanus*). The understorey is unmanaged and comprises bramble (*Rubus fructinosus* agg.), holly

A5.23 In respect of the potential of several trees to support protected species combined with a Tree Preservation Order associated with many of them, scattered trees are considered to be of **Local** level importance.

***Dense and Scattered Scrub***

A5.24 Dense scrub dominated by brambles is typically present along the boundaries of the Application Site whilst bracken is present within the north-east corner of the Application Site. Otherwise, scattered patches of butterfly bush (*Buddleja davidis*) were recorded across hardstanding areas where former car parks have fallen into disuse. Given the limited extent and botanical diversity dense and scattered scrub is considered to be of **Negligible** importance.

***Standing Water***

A5.25 A small, artificial garden pond is present in the south-east corner of the Application Site and is characterised by 0.4m high, vertical concrete banks. Vegetation is limited to floating lilies whilst filamentous algae is also abundant indicating poor water quality. Although ponds are typically considered Priority habitats, given the artificial construction of the pond and poor water quality, this habitat is considered to be of **Site** level importance only.

***Tall Ruderal Vegetation***

A5.26 A small area of the Application Site along its eastern boundary is dominated by tall ruderal vegetation and scattered scrub which has colonised a former allotment. This habitat is dominated by common nettle, although bramble patches also occur.

A5.27 Given the limited extent and botanical diversity, tall ruderal is considered to be of **Negligible** importance.

***Ephemeral/Short Perennial Vegetation***

A5.28 Scattered patches of ephemeral/short perennial vegetation have colonised former car parking areas that have fallen into disuse. Species present include bristly oxtongue (*Helminthotheca echioides*), perennial rye-grass, black medick, common vetch and fescue.

A5.29 Given the limited extent and botanical diversity, tall ruderal is considered to be of **Negligible** importance.

A6.4 The survey was completed by a NRW bat licensed ecologist in accordance with best practice guidelines. The visual assessments were undertaken on 9 May 2019 during which the trees were searched as thoroughly as possible from ground level, with the use of binoculars where necessary, on all elevations, where accessibility allowed. The tree assessment was undertaken with reference to the Tree Constraints Plan prepared in April 2019 by Steve Ambler & Sons Tree Specialists Ltd. A ground level tree assessment excluded parts of the woodland block located within the north-eastern boundary of the Application Site, given its proposed retention. All trees subject to survey are illustrated at **Plan EDP 2**.

A6.5 Suitable features for roosting bats sought for during the assessment included:

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

A6.6 Signs of roosting bats sought for included:

- Bat/s roosting *in-situ*;
- Bat droppings within or beneath a feature;
- Staining around or beneath a feature;
- Oily marks (staining) around roost access points;
- Audible squeaking from the roost;
- Large/regularly used roosts or regularly used sites may produce an odour; and
- Flies around the roost, attracted by the smell of guano.

A6.7 Based upon the results of the visual assessment and features/evidence identified, the following ratings for trees were used during the assessment:

- **Known or confirmed roost** - European Protected Species (EPS) licence required for works to tree to be completed lawfully;
- **High potential** – Tree supports one or more features that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time;

doors and windows, gaps between the barge or soffit boards and outside walls, and cracks between the window frames and the walls were included in the search. Possible bat access points around the eaves and barge boarding were noted, and areas where bat droppings may accumulate such as on the ground, ledges, window sills and walls were inspected.

A6.14 The survey also involved a search of the interiors of the buildings (where accessible) for evidence indicative of past or current use by roosting bats. A systematic search for direct evidence of bat presence was undertaken, concentrating on the floors, windows, exposed surfaces and potential access points. Any evidence of bat activity, bat sounds, potential access points or potential roosting sites were noted during the site visit.

A6.15 The signs searched for comprised the following:

- Bat/s roosting *in-situ* (live, dead or parts of);
- Bat droppings within or beneath a feature/access point;
- Staining around or beneath an access point/feature;
- Oily marks (staining) around roost access points/features;
- Audible squeaking from the roost (particularly on hot summer days);
- Large/regularly used roosts or regularly used sites may produce an odour; and
- Flies around the roost, attracted by the smell of guano.

A6.16 Based upon the results of the building assessments and the features/evidence identified (as above), each was assigned with a bat roost potential category, as shown in **Table EDP A6.1**.

**Table EDP A6.1**: Bat Roost Potential Categories for Buildings.

| Bat Roost Potential | Description |
|---|---|
| Confirmed Roost | Evidence of bats found. |
| High Potential | Many of the potential roosting features (listed above) present, with good foraging habitat nearby that is well connected to the Application Site. |
| Moderate Potential | A few potential roosting features (listed above) present with some foraging habitat nearby that is connected to the Application Site. |
| Low Potential | One or two roosting features present with foraging habitat nearby, but with limited connectivity. |
| Negligible Potential | No features present. |

*Limitations*

A6.17 Visual assessments for roosting bats can be undertaken at any time of year. As such these investigations were not limited by seasonal or climatic factors.

| Date | Start/ Finish Time | Sunset/ Sunrise Time | Time Recorded | Temp (C°) | Cloud (%) | Rain | Wind (Beaufort Scale) | Buildings Surveyed |
|---|---|---|---|---|---|---|---|---|
| 18.07.19 | 03:45 - 05:30 | 05:15 | Start | 15 | 70 | Nil | 2 | **B1/B2** |
| | | | End | 15 | 55 | Nil | 1 | |
| 19.07.19 | 03:46 - 05:31 | 05:16 | Start | 18 | 90 | Nil | 0 | **B3/B4, B8, B16** |
| | | | 05 :16 | 19 | 100 | Light drizzle | 1 | |
| 05.08.19 | 20:39 - 22:24 | 20:39 | Start | 18 | 20 | Nil | 3 | **B3/B4, B16** |
| | | | End | 17 | 90 | Nil | 3 | |
| 06.08.19 | 20:37 – 22:22 | 20:52 | Start | 18 | 90 | Nil | 4 | **B1/B2** |
| | | | End | 17 | 50 | Nil | 3 | |

Limitations

A6.23 The surveys were undertaken at an appropriate time of year and as such are not considered to be limited by seasonal or climatic factors. Light drizzle was recorded on 25 June 2019, but which commenced from 22:50 when any bats present will have already emerged. Light drizzle was also recorded at the end of the dawn re-entry survey on 19 July 2019, from 04:45 onwards. The rain became heavier from 05:05 onwards but by this time, most bats would have already returned to their roosts. As such, weather conditions are not considered to have affected the outcome of this assessment.

***Investigations of Bat Foraging/Commuting Activity***

*Manual Transect Surveys*

A6.24 Manual transect surveys were undertaken across the Application Site to identify areas of bat foraging activity and commuting routes used by bats with surveys completed in April, May, June and July 2019. Full details including the survey type, date, timing, and weather conditions during each of the transect surveys undertaken to date during 2019 is given in **Table EDP A6.3**. Weather conditions were largely optimum for bat surveys, being relatively warm with light winds and no rain.

**Table EDP A6.3**: Date, timing and weather conditions of bat activity surveys.

| Survey date | Dusk/ dawn | Survey time | Sunrise/ sunset time | Weather conditions | | | |
|---|---|---|---|---|---|---|---|
| | | | | Temp (°C) | Cloud (%) | Rain | Wind (Beaufort scale) |
| 24.04.2019 | Dusk | 20:22-22:22 | 20:22 | 13.0-12:0 | 50-90 | None | 2-1 |
| 20.05.2019 | Dusk | 21:04-23:04 | 21:04 | 17.0-13.0 | 80-30 | None | 2 |
| 26.06.2019 | Dusk | 21:34-23:34 | 21:34 | 16.9 | 100 | None | 4 |

| Sampling Period | Location Number | Microphone | | Min temp (ºC) |
|---|---|---|---|---|
| | | Height (m) | Direction | |
| 20-27 May 2019 | 1 | 1.5m | north-west | 10.0 |
| | 2 | 1.5m | south-west | 10.0 |
| 26-31 June 2019 | 1 | 1.0m | west | 11.8 |
| | 2 | 2.0m | north | 12.5 |
| 24-29 July 2019 | 1 | 2.0m | south-east | 14.3 |
| | 2 | 2.0m | north | 18.3 |
| 1-5 August 2019 | 1 | 2.0m | south-east | 13.5 |
| | 2 | 2.0m | north | 13.0 |

A6.29 The sound files recorded by the Anabats were filtered for each of the UK's bat species/species groups using Analook software's filter function. The parameters for the species filters are based on those proposed by Chris Corben and Kim Livengood[12] and have been fine-tuned using known call parameters for each of the species. All files passing the various filters were checked manually using sonogram analysis in accordance with published guides[13] to confirm the species identification of each bat call.

Limitations

A6.30 Due to climatic and environmental factors in the immediate vicinity of each of the Anabat locations, the sensitivity of each Anabat had to be adjusted and was therefore not consistent across all locations. This can affect the number of bat calls recorded by each detector and has been taken into account when describing bat activity levels in the results section.

A6.31 In addition, the identification of calls and species using Analook software is dependent upon the quality of the recording made which can be influenced by the following factors, which may limit levels of activity and species recorded:

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

A6.32 The Anabat deployed at Position 1 during June 2019 failed after the second night such that no further data was recorded during the deployment. In consideration of results obtained to date, this is not considered to have affected an assessment of the Application Site.

A6.33 The Anabat deployment at Position 2 during July 2019 failed after the second night such that no further data was recorded during the deployment. As this was the second time when one of

[12] Taken from Analook W training course and workshop, September 2013
[13] Russ (2012). *British Bat Calls, a guide to species identification*. Pelagic Publishing, Exeter

A6.39 This was followed by dusk emergence and dawn re-entry surveys of nine buildings (**B2-8**, **B10-11** and **B16**) with low-moderate potential to support roosting bats during May and June 2016 during which a single common pipistrelle was recorded re-entering Felthorpe House (**B16**) during the dawn survey. Four unidentified bats (presumed to be *Myotis* species following internal inspection of the building) were also noted re-entering the Camelot/Dolaucothi (**B1**/**B2**) accommodation block above a window lintel on the third floor.

A6.40 As such, Felthorpe House and the Camelot/Dolaucothi accommodation block have previously been confirmed as roosts for common pipistrelle and presumed *Myotis* bat species following detailed survey effort undertaken by Ecosulis in 2016.

***Investigations of Bat Roosting – Trees***

A6.41 During the initial ground level assessment of trees completed on 9 May 2019 one tree (**T100**) was considered to have high potential, thirteen (**T16**, **T48**, **T61**, **T90**, **T97**, **T105**, **T23.2**, **T23.5**, **T23.6**, **T23.7**, **T7.1**, **T7.2**) were considered to have moderate potential, and a further nine trees (**T7.3**, **T23.1**, **T23.3, T23.4**, **T53**, **T80**, **T91**, **T92**, **T94**) were considered to have low potential to support roosting bats. The remaining trees onsite were assessed as having negligible potential.

A6.42 The initial ground level tree assessment for roosting bats was undertaken with reference to the Tree Constraints Plan prepared by Steve Ambler & Sons Tree Specialists Ltd (April 2019). The numbering of the trees reported in **Table EDP A6.5** below is therefore consistent with the Tree Constraints Plan. Some of the trees were reported as part of a larger tree group and therefore they have not been individually categorised. The findings of the initial ground level tree assessments are summarised in **Table EDP A6.5**:

**Table EDP A6.5**: Ground Level Tree Inspection Results, May 2019

| Tree ID | Species | Description (including BS5837:2012 Tree Survey Categorisation and key features) | Bat Roost Potential May 2019 |
|---|---|---|---|
| **T7.1** | Apple tree | Three limb holes observed. | Moderate |
| **T7.2** | Apple tree | One knot hole observed facing north. | Moderate |
| **T7.3** | Apple tree | One knot hole observed. | Low |
| **T23.1** | Ash tree | Covered in dense ivy. | Low |
| **T23.2** | Pine tree | The tree has flaking bark. | Moderate |
| **T23.3** | Sequioa tree | Folds within the bark offering limited potential for roosting bats, especially immediately under the tree limbs which could provide some shelter. | Low |
| **T23.4** | Sequioa tree | Folds within the bark offering limited potential for roosting bats, especially immediately under the tree limbs which could provide some shelter. | Low |
| **T23.5** | Pine tree | Pine tree with flaking bark. | Moderate |
| **T23.6** | Ash tree | Old ash tree with rot holes visible and flaking bark. | Moderate |
| **T23.7** | Common wayfaring tree | The tree has dense ivy cover. | Moderate |

**T105** was thus undertaken on 17 September 2019. No evidence of roosting bats was identified during survey effort. The findings of the aerial tree assessments are summarised in **Table EDP A4.6**. The location of trees with bat roosting potential is depicted on **Plan EDP 2**.

**Table EDP A4.6**: Summary of results from the aerial tree assessments.

| Bat Potential | Tree No. | Species | PRF Present | Signs of Bat Presence |
|---|---|---|---|---|
| Negligible | **T61** | Silver Birch | Silver birch has a wound facing southern tree aspect and is present at approximately 4.5m height. The wound was very open and there was no shelter around the callus. | None. |
| Low | **T97** | Apple Tree | A wound is located along the north-east stem of the apple tree, less than 1m off the ground. The wound measures approximately 4cm in width, 8cm in height, 3cm in depth and 6cm away from the stem of the tree. Woodlice were present within the wound. | None. |
| Moderate | **T100** | Foxglove Tree | A tear out is present along western facing limb approximately 4.5m off the ground. Its depth is 30cm and measures 5cm in width. It has horizontal internal direction and is spherical or domed shaped. There were minor cobwebs present.<br><br>A knot-hole is present on south-west facing limb approximately 4.5m off the ground. It measures 20cm in depth and 2cm in width. Woodlice were present within the knot-hole.<br><br>A woodpecker hole is present within the southern facing limb. The height of the hole is approximately 3.5m off the ground. Its depth is 35cm and measures 3cm in width. Woodlice were present within the woodpecker hole. | None. |
| Moderate | **T105** | Common Horse Chestnut Tree | A lifting bark plate is present along north-west and south-east aspect of the tree approximately 2.2m and 2m off the ground. The height away from the step measures approximately 30cm and 5cm and the width measuring approximately 2cm. | None. |

***Investigations of Bat Roosting – Buildings***

*Visual Inspection*

A6.45 A description of each building and its value for roosting bats is summarised within **Table EDP A6.7** and illustrated at **Plan EDP 3**.

| Building ID | Description and Photo | Evidence of Bats/Potential Roost Features | Bat Roost Potential |
|---|---|---|---|
| **B6**: Edward Anwyl | <br>Non-rendered external brick walls, low pitched roof made of corrugated metal and bitumen felt on top. The building has several chimney flue pipes. The eves and gable ends are enclosed with timber. | The gable ends have some gaps along the projecting eves, which could potentially lead into the structure.<br><br>The roof itself is in a good state of repair with bitumen felt intact and the chimney flu pipes tightly fitted. No light ingress was observed from the inside of the loft void, which is well maintained.<br><br>No signs of bats. No nesting birds. | Low summer roosting and negligible hibernation potential.<br><br>No change in ecological baseline. |
| **B7**: Library | <br>External walls made of brick and concrete breezeblock, with external render. The roof is flat and does not appear to provide roosting opportunities. Single storey extension is located along southern elevation and covered with concrete roof tiles. A projecting roof covered with concrete roof tiles is located along the north entrance. | There is a gap along the south-western roof corner of the extension, where mortar has fallen out. The gap appears to lead under the roof tiles.<br><br>Lead flashing located along the northern elevation of the library is slightly raised providing low potential roosting opportunities.<br><br>No signs of bats. No nesting birds. | Low summer roosting and negligible hibernation potential.<br><br>No change in ecological baseline. |

| Building ID | Description and Photo | Evidence of Bats/Potential Roost Features | Bat Roost Potential |
|---|---|---|---|
| **B10**: TY Webley | <br>The external walls are made of stone without render. The roof is natural slate material with clay ridge tiles. | The building is, overall, in a good state of repair with few potential access points observed. There were three raised roof tiles noted behind the chimney area as well as light ingress coming into the loft void from the eves. The loft void is, in its entirety, cladded with timber sarking. On the outside, the eves were closed with timber and generally in good condition. There are also three brick chimneys which are coated and in good condition.<br><br>No signs of bats. No nesting birds. | Low summer roosting and low hibernation potential.<br><br>No change in ecological baseline. |
| **B11**: Ty Hywel | <br>The external walls are made of stone without render. The roof is natural slate material with clay ridge tiles. | The internal roof void is lined with timber sarking. There is some light ingress visible coming internally from the roof area. Some of the natural slate tiles are raised and potentially provide access into the space between the timber sarking and the tiles themselves.<br><br>No signs of bats. No nesting birds. | Low summer roosting and low hibernation potential.<br><br>No change in ecological baseline. |

common pipistrelle bats were identified emerging from a soffit box on the western elevation between 22:01 and 22:36. This is in addition to emergence of a single common pipistrelle bat from a soffit box on the western elevation of **B3** at 22:11.

A6.49 A dusk emergence survey of **B3**/**B4** undertaken on 5 August 2019 identified two common pipistrelle bats emerging from the soffit box near the central gable end of the eastern elevation at 21:30 and 21:40 in addition to one common pipistrelle emerging at 21:29 from a second location.

A6.50 During a dusk emergence survey of **B1**/**B2** on 25 June 2019, a single common pipistrelle emerged from the soffit box on the western elevation at 22:26 whilst a possible re-entry of a common pipistrelle bat was recorded during a dawn re-entry survey on 18 July 2019 at 04:05. A single common pipistrelle bat was also observed emerging from the soffit box along the south-eastern corner of **B2** during a second dusk emergence survey.

A6.51 With respect to **B16**, a single common pipistrelle was recorded entering a roosting feature within the eaves on the northern elevation of the building at 22:01 on 25 June 2019. On 5 August 2019, a soprano pipistrelle bat was also observed emerging from building **B16** at 21:11 specifically from a crevice located above a window lintel.

A6.52 Based on the results, it is considered that buildings **B1**/**B2**, **B3**/**B4** and **B16** each support a summer day roost for low numbers of common pipistrelle bats. **B16** also supports a summer day roost for low numbers of soprano pipistrelle bats. Both **B1**/**B2** (Camelot/Dolaucothi accommodation block) and B16 (Felthorpe House) have previously been confirmed as supporting roosts for common pipistrelle and presumed *Myotis* bat species following detailed survey effort undertaken by Ecosulis in 2016. *Myotis* bat species were not recorded roosting within B1/B2 during surveys undertaken by EDP in 2019.

A6.53 The dusk emergence and dawn re-entry survey results of the buildings located within the Application Site are illustrated on **Plan EDP 4** and **Plan EDP 5.**

**Investigations of Bat Foraging/Commuting Activity**

A6.54 Bat foraging and commuting activity recorded to date during the transect and automated detector surveys undertaken between April 2019 and August 2019 is summarised by species/genus below and illustrated on **Plans EDP 7a-7d**. The following should be read in conjunction with these plans and automated detector survey results in **Tables EDP A6.8**-**A6.13**.

A6.55 With respect to foraging/commuting bats, activity surveys undertaken by Ecosulis in September and October 2015 identified moderate levels of pipistrelle activity with relatively high concentrations recorded along the northern boundary of the Application Site. Species recorded include common pipistrelle, soprano pipistrelle and noctule.

A6.56 This is largely constent with update surveys undertaken during April, May, June, July and August 2019. Six bat species/species groups (myotid bat species were not identified to species level), were confirmed to be present foraging and/or commuting within the Application

building. However, no evidence of current roosts was identified by EDP during update survey effort. Based upon this data, the use of the Application Site by Myotid bat species is likely to be of no more than local importance.

A6.60 Noctule bats are widespread across the UK, with its population and range considered to remain stable in the UK[19]. Only low number of noctule bats were recorded by surveyors and static detectors between April and July 2019. An increase in the number of passes by this species was, however, recorded during August 2019. Nevertheless, noctule bats using the Application Site are therefore considered to be of site level importance.

A6.61 Soprano pipistrelle bats are widely distributed across the UK, and whilst populations declined dramatically in the twentieth century, field survey data show statistically significant population increases[20]. Although only encountered infrequently during activity surveys, typically associated with the northern, eastern and southern boundaries of the Application Site, a summer day roost for soprano pipistrelle was identified within **B16**. Soprano pipistrelle bats supported by the Application Site are therefore considered to be of local importance.

A6.62 Brown long-eared bats are considered to be widespread and common across the UK with national populations considered stable. In contrast, populations of grey-long eared bat are largely limited to the south coast of England although this species is under recorded. Brown long-eared bat was recorded only once with remote detector work along the northern boundary of Felthorpe House although this species is likely to be underrepresented given it's not often picked up by bat detectors. The population of long-eared bat species supported by the Application Site is considered to be of Local importance.

A6.63 Serotine bats are restricted to southern England and Wales where they are widespread, but scarce, albeit populations are stable nationally. With respect to Leisler's bats, this species is uncommon but widespread throughout England, Wales and Scotland. Both Leisler's and serotine bats were recorded in association with dense vegetation along the northern boundary of Felthorpe House during June 2019 with the help of remote detector surveying. Therefore, even though the recordings of serotine and Leislers bats were scarce, they do indicate the importance of the vegetation along the south-eastern Application Site boundary as a key commuting corridor for several species of bats. Given their rarity, serotine bats using the Application Site are considered to be of Local Importance whilst Leisler's bats supported by the Application Site are not considered to be significant beyond a Site context.

A6.64 The abundance and diversity of bat species recorded on site is considered to be typical for the sub-urban edge of Newport, with common and widespread generalist species such as common pipistrelle bats accounting for the vast majority of foraging and commuting activity. Overall therefore, the Application Site is considered to be of local importance to the local bat population.

[19] Bat Conservation Trust, 2018. The National Bat Monitoring Programme. Annual Report 2017
[20] Bat Conservation Trust, 2018. The National Bat Monitoring Programme. Annual Report 2017

**Table EDP A6.11**: Automated Detector Survey Results May 2019. (*Less than 1%).

| Position | Bat Species | Number of Bat Passes Recorded per Night | | | | | Total | % of Total |
|---|---|---|---|---|---|---|---|---|
| | | 20 May | 21 May | 22 May | 23 May | 24 May | | |
| 1 | Common pipistrelle | 4 | 12 | 18 | 4 | 20 | 58 | 87 |
| | *Myotis sp.* | 0 | 0 | 1 | 0 | 0 | 1 | 1 |
| | Noctule | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| | Soprano pipistrelle | 2 | 2 | 2 | 0 | 1 | 7 | 11 |
| | **Total** | **6** | **14** | **21** | **4** | **22** | **67** | **100** |
| 2 | Common pipistrelle | 0 | 5 | 3 | 3 | 1 | 12 | 80 |
| | Noctule | 1 | 0 | 0 | 0 | 1 | 2 | 13 |
| | Soprano pipistrelle | 0 | 0 | 1 | 0 | 0 | 1 | 7 |
| | **Total** | **1** | **5** | **4** | **3** | **2** | **15** | **100** |

**Table EDP A6.12**: Automated Detector Survey Results June 2019. (*Less than 1%).

| Position | Bat Species | Number of Bat Passes Recorded per Night | | | | | Total | % of Total |
|---|---|---|---|---|---|---|---|---|
| | | 26 June | 27 June | 28 June | 29 June | 30 June | | |
| 1 | Common pipistrelle | 35 | 60 | Detector Failed. | | | 95 | 95 |
| | Noctule | 0 | 4 | | | | 4 | 4 |
| | **Total** | **35** | **64** | | | | **99** | **100** |
| 2 | Common pipistrelle | 32 | 68 | 71 | 61 | 33 | 265 | 90 |
| | *Myotis sp.* | 0 | 1 | 2 | 1 | 0 | 4 | 1 |
| | Noctule | 0 | 3 | 1 | 1 | 2 | 7 | 2 |
| | Soprano pipistrelle | 0 | 3 | 5 | 2 | 4 | 14 | 5 |
| | Long eared bat | 0 | 0 | 1 | 0 | 0 | 1 | * |
| | *Nyctalus/ Eptesicus sp.* | 1 | 1 | 0 | 0 | 1 | 3 | 1 |
| | **Total** | **33** | **76** | **80** | **65** | **40** | **294** | **100** |

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* Score extrapolated from graphs within Oldham et al. (2000). *Evaluating the suitability of habitat for the Great Crested Newt (Triturus cristatus)*. Herpetological Journal 10 (4), 143-155

A8.5 During each survey visit, artificial refugia were individually checked by an experienced ecologist with any reptiles observed recorded, along with notes on their life stage (adult/juvenile) and sex.

A8.6 The peak survey count (maximum number of individuals recorded during any one survey visit) was then used to estimate approximate population size for each reptile species recorded. Estimates of population size followed the approach given in the withdrawn draft reptile mitigation guidelines[23]; and are summarised with respect to widespread reptiles in **Table EDP A8.2**.

**Table EDP A8.2**: Population Size Class Estimates

| Species | Population Size Class Category | | |
|---|---|---|---|
| | Small | Medium | Large |
| Slow-worm | < 10 | 10 - 40 | > 40 |
| Common Lizard | < 5 | 5 - 20 | > 20 |
| Grass Snake | < 5 | 5 - 10 | > 10 |
| Adder | < 5 | 5 - 10 | > 10 |

***Limitations***

A8.7 Reptile surveys undertaken within the Application Site were generally completed during suitable weather conditions and within recognised optimal month for reptile surveys. The temperatures recorded for all reptile surveys in 2019 were mostly within the recommended parameters for optimal conditions, with the exception of one occasion when the temperature did rise above 20°C (at the end of the second visit) and light rain was recorded during bi 7. This is not considered to have affected the results, particularly given similar numbers of reptiles continued to be identified.

**Results**

***Desk Study***

A8.8 Several records for widespread reptile species were received during the desk study including: a single record for adder (*Vipera berus*) dated 2008 approximately 1.5km south of the Application Site; six records of slow-worm (*Anguis fragilis*) dated between 2004 and 2015, with the nearest record being approximately 490m north-east; nine records of grass snake, with seven records in association with Caerleon Comprehensive School located approximately 665m south-west and a further two records 1.7km north; and one record of common lizard from 2007 located approximately 1.6km north of the Application Site.

A8.9 Reptile surveys undertaken by Ecosulis between mid-September and early October 2015 found no evidence of common reptiles onsite. This is in contrast to the results of update survey effort undertaken by EDP which confirmed presence of slow-worm within the Application Site (refer to **Plan EDP 8** for location). Full details of the number of individuals and peak survey count are given in **Table EDP A8.3**.

[23] Natural England (2011) *Natural England Technical Information Note TIN102 Reptile Mitigation Guidelines.* WITHDRAWN

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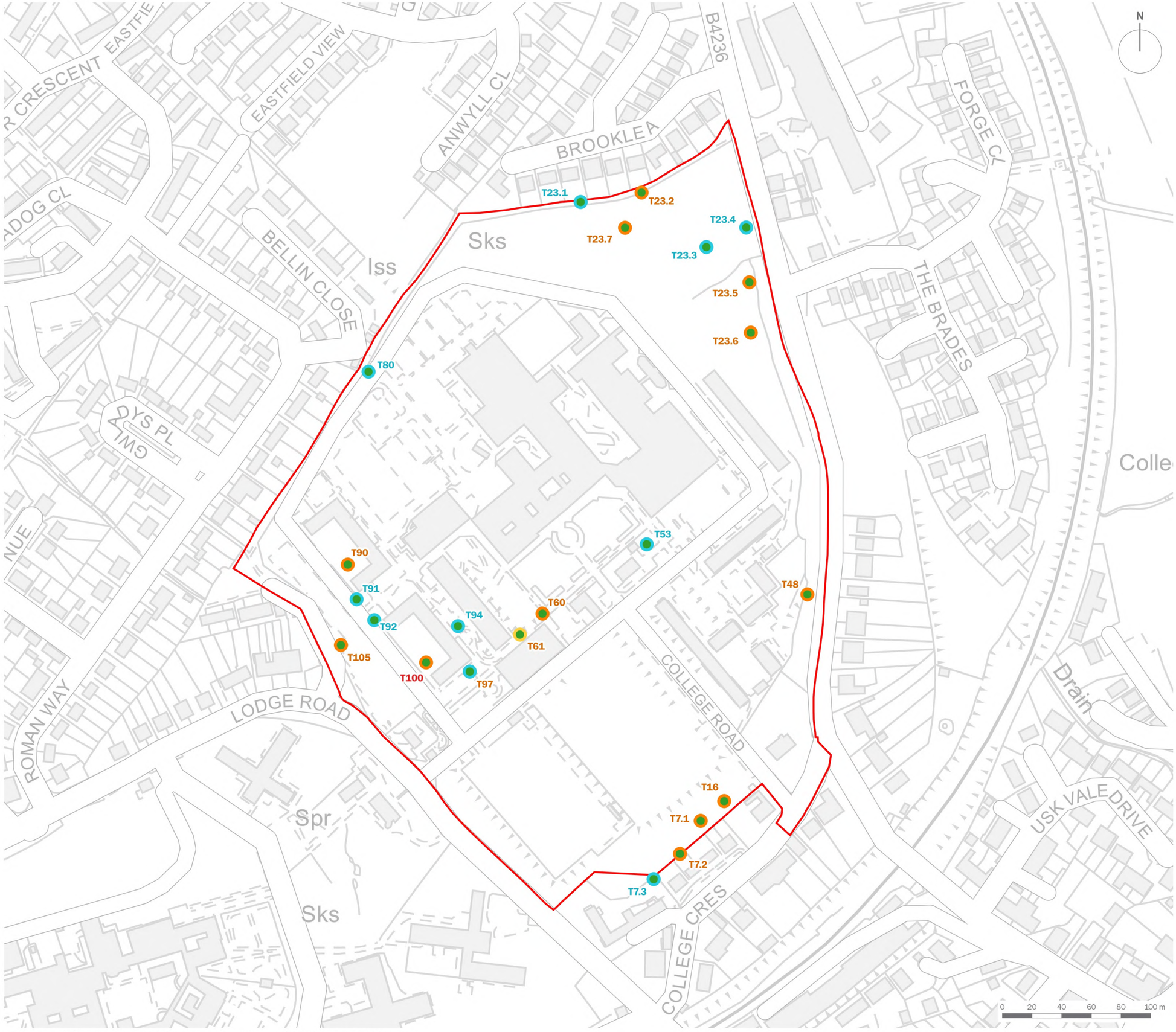


Site Boundary

Investigation of Bat Roosting Trees

- High Potential
- Moderate Potential
- Low Potential
- Negligible

client

**Redrow Homes (South Wales) Ltd**

project title

**USW Caerleon**

drawing title

**Plan EDP 2: Trees Roost Assessment Results**

| | | | |
|---|---|---|---|
| date | 17 OCTOBER 2019 | drawn by | GY |
| drawing number | edp5601_d001b | checked | LL |
| scale | 1:2,500 @ A3 | QA | JTF |

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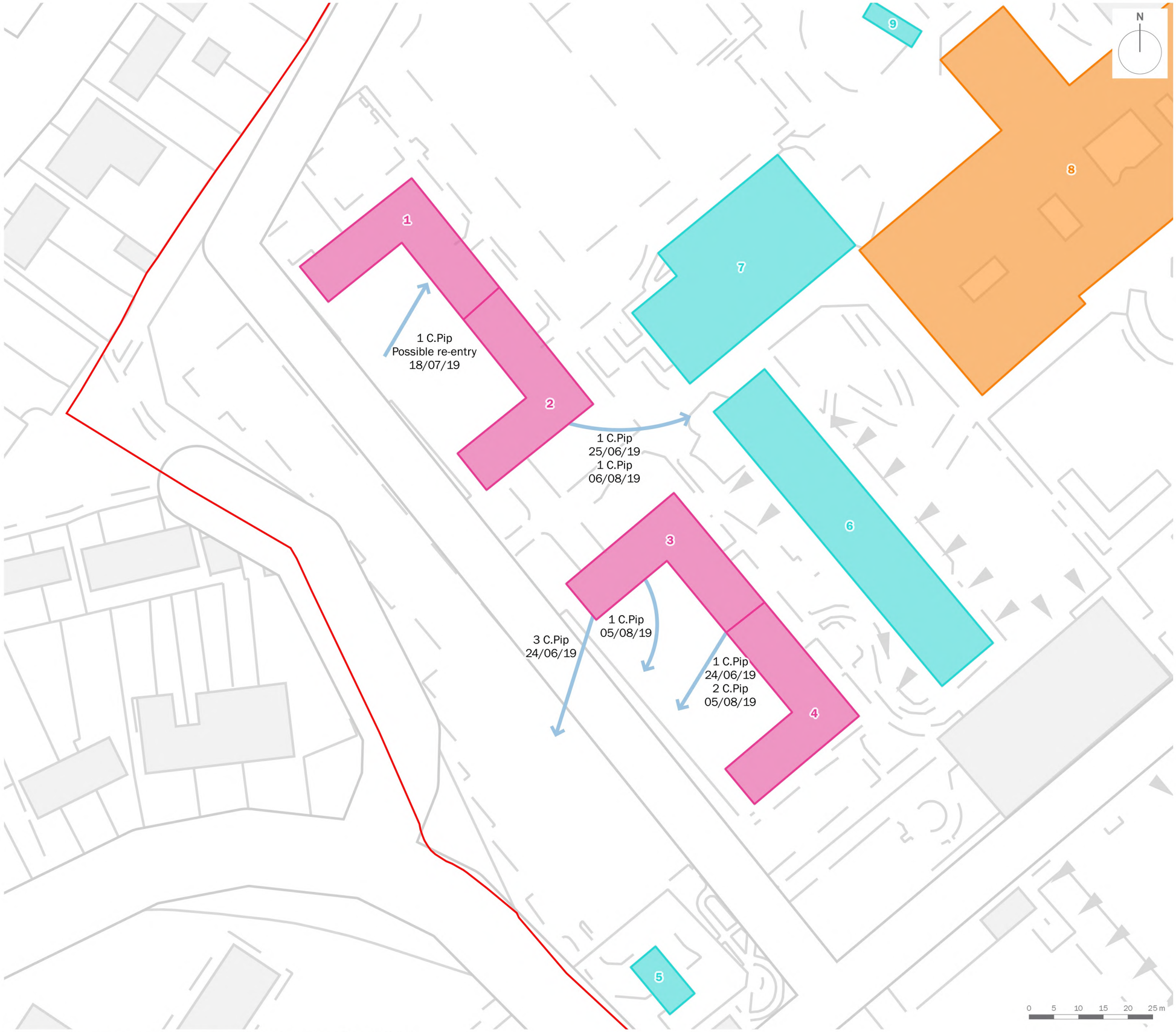


Site Boundary

Bat Emergence/Re-entry Surveys

Confirmed Roosts During 2019

Moderate Roost Potential

Low Roost Potential

Common Pipistrelle Emergence/ Re-Entry

client

**Redrow Homes (South Wales) Ltd**

project title

**USW Caerleon**

drawing title

**Plan EDP 4: Bat Emergence/Re-Entry Survey Results on B1/2 and B3/4**

| | | | |
|---|---|---|---|
| date | **17 OCTOBER 2019** | drawn by | **GY** |
| drawing number | **edp5601_d023** | checked | **LL** |
| scale | **1:750 @ A3** | QA | **CR** |

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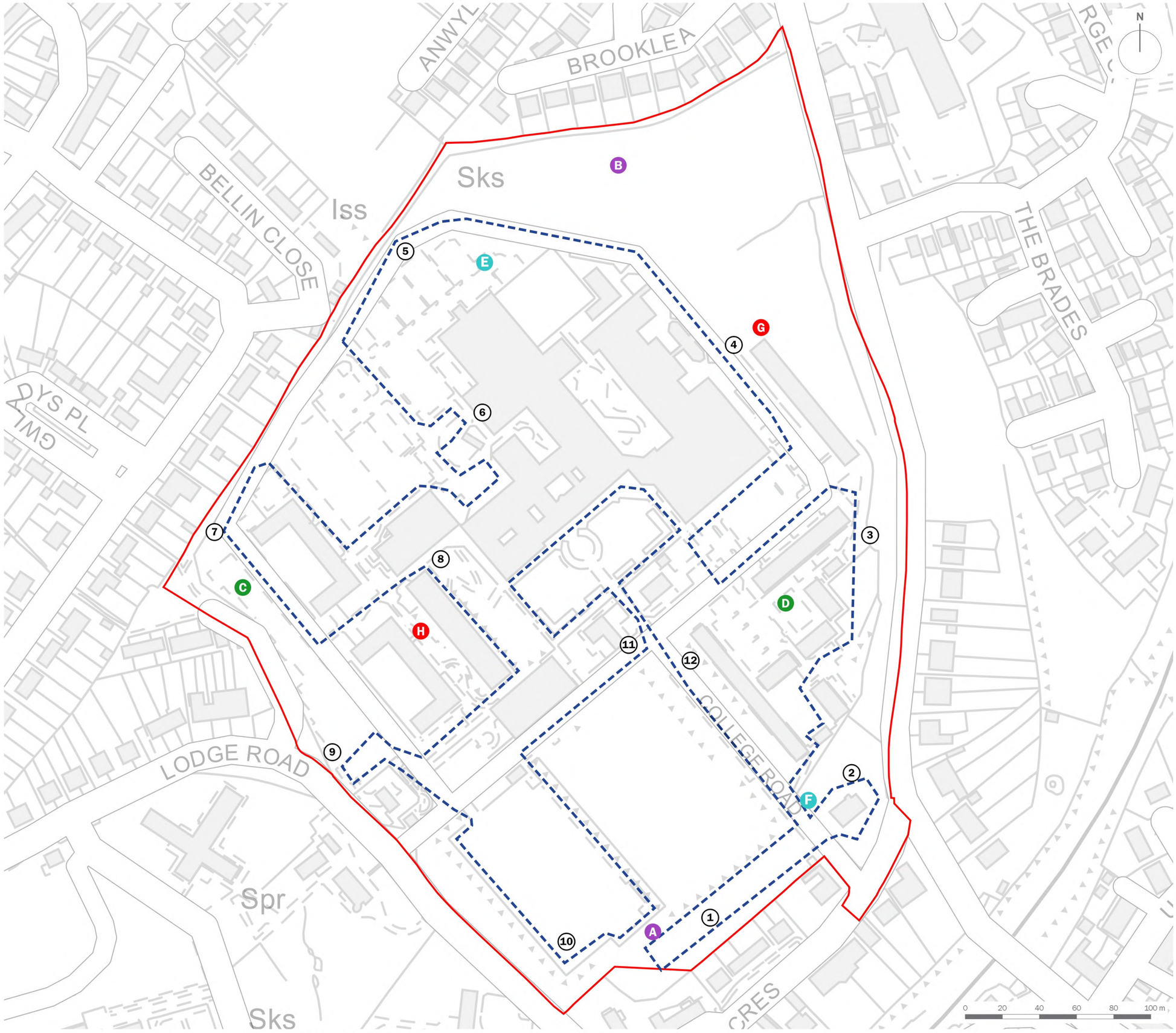


Site Boundary

Bat Transect Route

1 Listening Points

A Automated Detector (Anabat) Locations April

A Automated Detector (Anabat) Locations May

A Automated Detector (Anabat) Locations June

A Automated Detector (Anabat) Locations July and August

client

**Redrow Homes (South Wales) Ltd**

project title

**Caerleon University Campus**

drawing title

**Plan EDP 6: Automated Bat Detector Locations and Transect Route**

| | | | |
|---|---|---|---|
| date | 17 OCTOBER 2019 | drawn by | GY |
| drawing number | edp5601_d004 | checked | EM |
| scale | 1:2,000 @ A3 | QA | CR |

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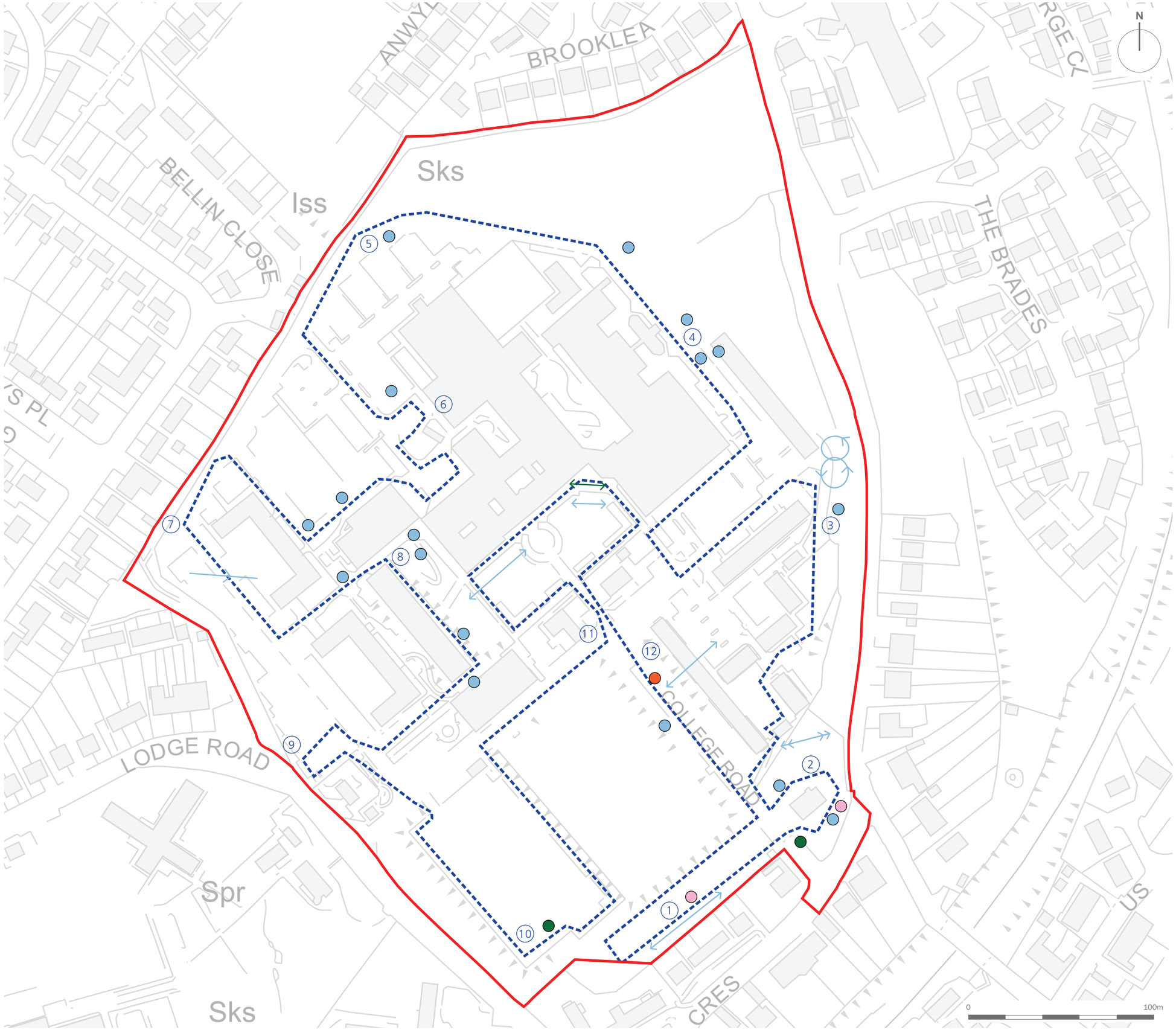


Site Boundary

**Bat Activity** (Colour denotes species)

Heard but not seen

Bat commuting (one chevron per bat)

Foraging Behaviour

Foraging Behaviour

**Bat Species**

Common pipistrelle

Soprano pipistrelle

Myotis Sp.

Noctule

**Transect Routes**

Transect Route

Listening Points

client
**Redrow Homes (South Wales) Ltd**

project title
**USW Caerleon**

drawing title
**Plan EDP 7b: May Bat Transect Survey Results 2019**

| | | | |
|---|---|---|---|
| date | **17 OCTOBER 2019** | drawn by | **LB** |
| drawing number | **edp5601_d007a** | checked | **EM** |
| scale | **Refer to scale bar** | QA | **GY** |

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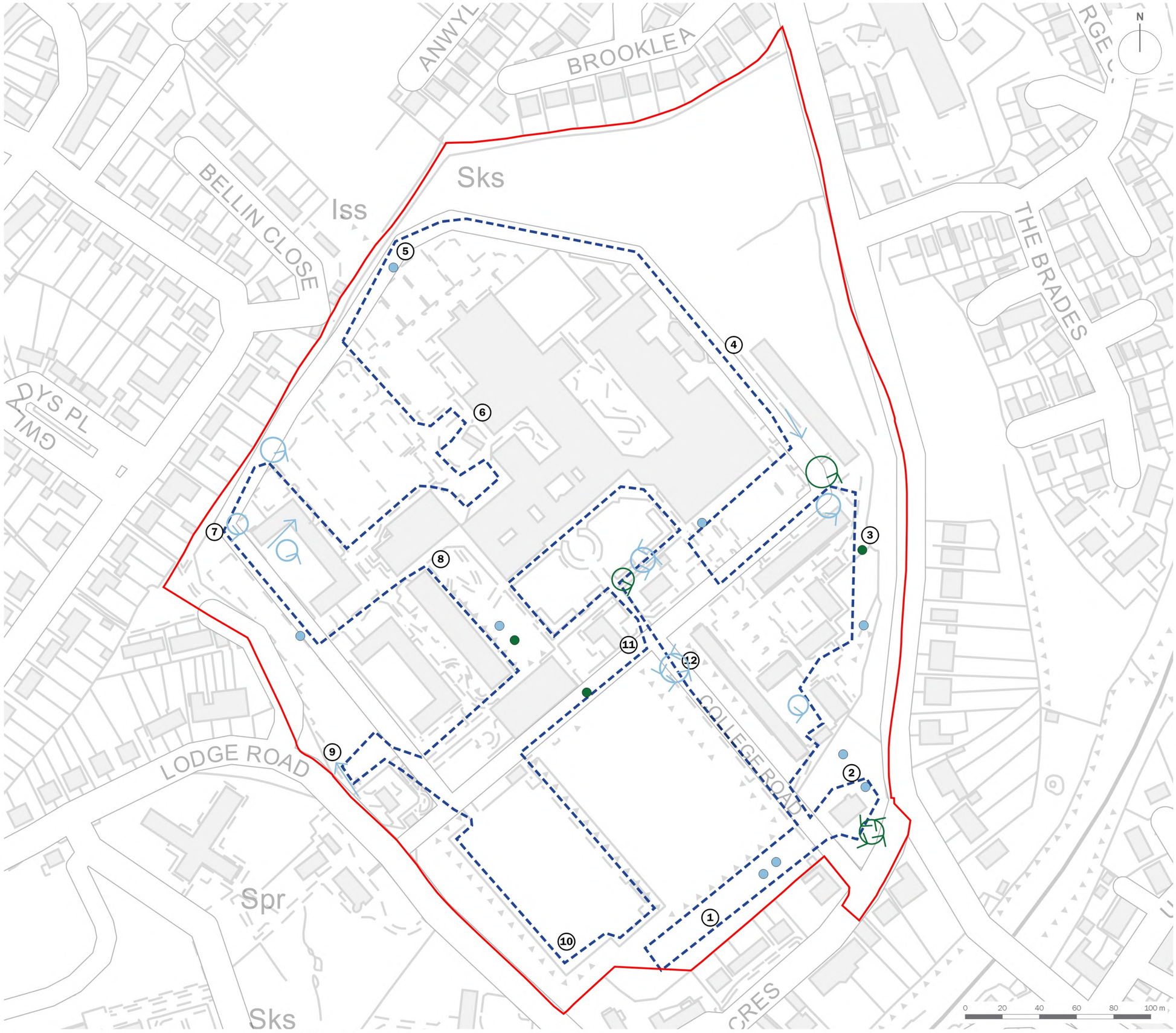


Site Boundary

Bat Activity (Colour Denotes Species)

Heard but Not Seen

Foraging Behaviour

Foraging Behaviour

Bat Species

Common pipistrelle

Soprano pipistrelle

Transect Routes

Listening Points

Transect Routes

client

**Redrow Homes (South Wales) Ltd**

project title

**USW Caerleon**

drawing title

**Plan EDP 7d: July Bat Transect Survey Results 2019**

| | | | |
|---|---|---|---|
| date | 17 OCTOBER 2019 | drawn by | AG |
| drawing number | edp5601_d022 | checked | LL |
| scale | 1:2,000 @ A3 | QA | CR |

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