H2.0 Policy Context

Legislative Framework

H2.1 In carrying out the ecological assessment of the proposed residential development, relevant international and national legislative instruments reflected in national, regional, county and local policies were reviewed. These included:

- Planning Policy Wales, Edition 10, December 2018 (PPW) Chapter 5: Distinctive and Natural Places;
- PPW supplementary Technical Advice Note 5 (TAN 5): Nature Conservation and Planning;
- Newport Local Development Plan (LDP) up to 2026 (adopted January 2015);
- Supplementary Planning Guidance (SPG) including Wildlife and Development (August 2015) and Trees, Woodland, Hedgerow and Development Sites (January 2017);
- Newport City Council Biodiversity Action Plan (BAP) for Newport (Local BAP or LBAP); and
- Environment (Wales) Act 2016.

H2.2 PPW and TAN5 set out particular policies in relation to the protection of biodiversity, green infrastructure, and geological conservation through the planning system. Such policies include those receiving statutory protection under existing legislative provisions and also those sites, habitats and species with such protection, thereby ensuring that the potential impacts of planning decisions on biodiversity, green infrastructure and geological conservation are fully considered.

H2.3 Locally important sites such as Sites of Importance for Nature Conservation (SINCs) are non-statutory designations declared by Newport City Council (NCC) under the provision of the *National Parks and Access to the Countryside Act* 1949. This aims to bring sites of established nature conservation value into active management for the public and to protect them from development that would adversely affect their substantive nature conservation value.

H2.4 The LDP includes strategic policies including Strategic Policy SP5, which seeks to ensure development within the countryside (beyond settlement boundaries) is appropriate and respects the landscape character and biodiversity of the immediate and surrounding areas. Policy SP9 seeks for the conservation, enhancement and management of recognised sites within the natural, historic and built environment within all development proposals.

H2.5 General policies detailed within the adopted LDP including Policy GP5, which requires development to: protect and encourage biodiversity and ecological connectivity; avoid or mitigate and compensate for negative effects to biodiversity, ensuring that there are no significant adverse effects on designated site and protected/priority habitats; ensure there are no unacceptable impacts on water quality, landscape quality, trees, woodland or hedgerows or a loss/reduction in quality if high quality agricultural land; and that proposals include an appropriate landscape scheme which enhances the site and green infrastructure.

H2.6 In addition, Countryside Policies include CE3, which seeks to safeguard features important for their visual qualities, biodiversity, recreation of amenity as 'Environmental Spaces and Corridors.' Policy CE8 sets out a requirement for the protection of locally designated nature conservation and geological sites, with unavoidable harm minimised by effective compensation, mitigation and restoration measures which aim to ensure no loss in the overall nature conservation value of the area or feature.

H3.0 Assessment Methodology & Significance Criteria

Assessment Methodology

Scope of the Assessment

H3.1 The scope of the ecological impact assessment (EcIA) has been determined by current ecological investigations of the EIA site. This process informed the identification of Important Ecological Features (IEFs) pertinent to the proposals, and the likely scope of potential impacts on these receptors.

Extent of the Study Area

H3.2 The field surveys undertaken to inform the assessment covered the EIA site boundary and, in some instances, adjacent habitats to provide contextual information and/or to ensure species populations were studied adequately. Where access to adjacent land was not available (due to landownership boundaries) assumptions have been made on the ecological character of the adjacent land based on other information.

H3.3 An ecological desk study, which encompassed the EIA site was undertaken during May 2019 (see Appendix H1 for detailed scope and methodologies employed). A search radius of 10km from the EIA site boundary was employed for statutory designated sites of international value, 2km for sites of national importance, 2km for sites of local importance and 2km for Protected/Priority species records. The search areas reflect the sensitivity and value of potential ecological receptors and are considered to be sufficient to cover the potential Zone of Influence (ZoI) of the proposed development on these receptors, while providing contextual information to assist with determining and evaluating the baseline.

H3.4 The extent of the impact assessment has been defined as the Zone of Influence. The Zone of Influence has been determined through a review of the baseline ecological conditions relative to the emerging masterplan and consideration of the proposed activities, as well as through liaison with other specialists involved in assessing the impacts of the proposed development as considered within the ES and other supporting documentation.

Collection of Baseline Information

H3.5 The baseline ecology information collated by EDP during 2019 for the EIA site and its surroundings is detailed within the Ecological Baseline Report as set out within Appendix H1. The Appendix details the full methodologies employed, the subsequent findings and the implications for the proposed development. A summary of the relevant baseline investigations of the EIA site undertaken/proposed for completion during 2019 are provided below:

- A desk study in 2019 involving the request for biodiversity information from South East Wales Biodiversity Records Centre (SEWBReC) for designated sites of nature conservation value, and for records of protected and/or notable species in addition to a search of the Government's MAGIC website for additional designations;
- An Extended Phase 1 Survey completed in May 2019;
- A ground level visual assessment of on-site trees for bat roosting potential, completed during May 2019. All trees with moderate to high potential for roosting bats, to be impacted by development were then subject to a further detailed aerial inspection on two occasions during September 2019;

- County (Newport); and
- Local (Caerleon).

Valuing Designated Sites

H3.10 Within the UK, certain valued habitats have been assigned a level of nature conservation value through designation; and the Guidelines referred to above recommend that the reasons for this designation need to be taken into account in the assessment. Such designations include:

- Internationally important sites such as Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and RAMSAR sites;
- Nationally important sites such as Sites of Special Scientific Interest (SSSIs), National Nature Reserves (NNRs) and Local Nature Reserves (LNRs); and
- Regional/County/District important sites, which within NCC are referred to as SINCs.

H3.11 Where a feature has value at more than one designation level, its overriding value is that of the highest level.

Valuing Habitats

H3.12 The Guidelines recommend that the value of areas of habitat and plant communities should be measured against published selection criteria where available, such as those listed on Annex 1 of the Habitats Directive, or those listed as habitats of principal importance under Section 7 of the Environment (Wales) Act or on the Caerphilly Local Biodiversity Action Plan. Where areas of a habitat or plant communities do not meet the necessary criteria for designation at a specific level, the Guidelines recommend that the ecologist may consider the local context if appropriate. Additionally, consideration should also be given to the potential value of those habitats, particularly where habitats are in a degraded or unfavourable condition at the time of the assessment.

Valuing Species

H3.13 The Guidelines require consideration of all protected species as 'important' features where there is the potential for a breach in legislation. Additionally, species should be assessed according to their biodiversity value, measured against published selection criteria where available (such as those listed on Annex 1 of the Habitats Directive and those listed as habitats of principal importance under Section 7 of the Environment (Wales) Act. In assigning value to a species, it is necessary to consider its distribution and status, including a consideration of trends based on available historical records, as well as their legal protection. The valuation of populations should make use of any relevant published evaluation criteria available at the time of assessment.

Characterising Potential Impacts

H3.14 The Guidelines state that the assessment of impacts should be undertaken in relation to the baseline conditions within the ZoI that are expected to occur if the development were not to take place. Having identified the activities likely to cause significant impacts, it is then necessary to describe the resultant changes and to assess the impact on valued ecological features.

H3.15 The Guidelines recommend that the process of identifying impacts should make explicit reference to aspects of ecological structure and function on which the feature depends. Impacts must be assessed in the context of the baseline conditions within the Zone of Influence during the lifetime of the proposed residential development.

H4.0 Baseline Conditions

Existing Conditions

H4.1 This section sets out the baseline context of the proposed development and should be read in conjunction with Appendix H1, where full methodologies and results of the ecological investigations are set out.

Context

H4.2 The EIA Site comprises the former Caerleon Campus of the University of South Wales. It is situated at approximate Ordnance Survey Grid Reference (OSGR) ST 33496 91290 and measures approximately 12.7 hectares (ha) in size. The EIA site is situated in the town of Caerleon, circa 1.1km north and west of the River Usk beyond which is the city of Newport.

H4.3 The EIA Site is dominated by hardstanding and buildings which are predominantly vacant in addition to areas of amenity grassland and ornamental shrub planting. Such areas are now largely unmanaged with encroaching scrub. Landscaped areas located more centrally within the EIA site are, however, still subject to frequent mowing. The north-eastern corner and eastern boundary of the EIA site is characterised by an unmanaged, tussocky grassland sward with scattered non-native and native trees contiguous with a linear belt of broadleaved woodland.

H4.4 Located within the town of Caerleon the wider landscape is dominated by residential housing. A railway line travelling north to south is circa 180m east of the EIA site, beyond which lies open countryside comprising agricultural grassland and woodland units.

Designated Sites

Statutory Designations

H4.5 The EIA site is not covered by any statutory designations; however, there are two SACs, one SPA and one Ramsar site within 10km of the site. There is also one SSSI within 2km. This is summarised in Table H4.1. Distribution maps received as part of the desk study are included in Appendix H1.

Table H4.1 Summary of Statutory Designations within the EIA Site's Potential Zone of Influence

Designation	Distance from site	Interest Feature(s)
Ramsar		
Severn Estuary	7.3km (S)	The Severn Estuary is designated a Ramsar Site for: its immense tidal range; presence of unusual estuarine communities, reduced diversity and high productivity; populations of migratory fish; bird assemblages of international importance; and fish species associated with the whole estuarine and river system.
SAC		
River Usk	1.1km (S&E)	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 (*Petromyzon marinus*), river lamprey (*Lampetra fluviatilis*) and brook lamprey (*Lampetra planeri*), twaite shad (*Allosa fallax*), Atlantic salmon (*Salmo salar*), bullhead (*Cottus gobio*) and otter (*Lutra lutra*).
Severn Estuary	7.3km (S)	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

Designation	Distance from Site	Interest Feature(s)
(C11)		
Graig Wood ASNW (C1)	1.9km (NW)	Ancient semi-natural woodland.
Ancient Semi-natural Woodland (201)	2.0km (N)	Ancient semi-natural woodland.

Habitats

H4.7 A full description of the habitats within the EIA site together with their associated plans illustrating the locations of these features assessed, is set out within Appendix H1. In summary, the habitats found and described on and immediately adjacent to the EIA site include:

- Buildings and hardstanding;
- Former Amenity Grassland;
- Poor Semi-improved Grassland;
- Semi-natural Broadleaved Woodland;
- Shrub Planting;
- Scattered Trees;
- Dense and Scattered Scrub;
- Standing Water;
- Tall Ruderal Vegetation; and
- Ephemeral/Short Perennial Vegetation.

Buildings and Hardstanding

H4.8 The EIA site is dominated by buildings of varying age and construction and include former student residences, a sports hall, offices and lecture halls. These buildings are now predominantly empty. Hardstanding associated with roads, public footpaths and car park areas surround the buildings.

H4.9 Buildings and hardstanding are considered to be of negligible importance per se, although the former have potential to support protected species, namely roosting bats and nesting birds.

Former Amenity Grassland

H4.10 Pockets of amenity grassland are located throughout the EIA site whilst a sport's pitch is present within the south of the 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*).

H4.11 Small discrete 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

Scattered Trees

H4.20 Also associated with areas of shrub planting are scattered mature and semi-mature trees, again comprising a mix of non-native, ornamental and native species. Species include foxglove tree (*Paulownia tomentosa*), black mulberry (Morus *nigra*), black walnut (*Juglans nigra*), copper beech (*Fagus sylvatica f. purpurea*), cut-leaved beech (*Fagus sylavatica 'Laciniata'*), giant redwood (*Sequoiadendron giganteum*), silver birch (*Betulus pendula*), beech (*Fagus sylvatica*), sweet gum tree (*Liquidambar styraciflua*) and more notably, small-leaved lime (*Tilia cordata*). Many of these specimens carry a Tree Preservation Order (TPO).

H4.21 Non-native and native tree standards are also present within the north-east corner of the EIA site in association with poor semi-improved grassland and dense scrub comprising bramble, hawthorn (*Crataegus monogynea*), holly and blackthorn (*Prunus spinosa*). A line of trees is also present along the southern boundary of the EIA site and include silver birch, oak (*Quercus sp.*), holly, privet (*Ligustrum sp.*), semi-mature ash (Fraxinus excelsior), elder (*Sambruca nigra*) and sweet chestnut (*Castanea sativa*).

H4.22 Smaller, shrubby trees approximately 4m high have additionally been planted within hardstanding and car parking areas and typically include such specimens as wild cherry (*Prunus avium*) and hornbeam (*Carpinus betulas*).

H4.23 In respect of the potential of several trees to support protected species combined with a TPO or associated with many of them, scattered trees are considered to be of local level importance.

Dense and Scattered Scrub

H4.24 Dense scrub dominated by bramble is typically present along the boundaries of the EIA site whilst bracken is present within the north-east corner of the 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

H4.25 A small, artificial garden pond is present in the south-east corner of the EIA 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 and ornamental nature of the pond combined with poor water quality and limited macrophyte diversity, this habitat is considered to be of site level importance only.

Tall Ruderal Vegetation

H4.26 A small area of the EIA 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.

H4.27 Given the limited extent and botanical diversity, tall ruderal is considered to be of negligible importance.

Ephemeral/Short Perennial Vegetation

H4.28 Scattered patches of ephemeral/short perennial vegetation have colonised former car parking areas that have fallen into disuse. Species present include bristly ox-tongue (*Helminthotheca echioides*), perennial rye-grass, black medick, common vetch and fescue.

H4.35 Within the EIA site, dense scrub, shrub and tree planting and adjacent broadleaved woodland is considered to provide suitable breeding and foraging habitat for birds. Amenity and poor semi-improved grassland are considered less suitable for breeding, albeit likely offering foraging opportunities.

H4.36 Habitats present on-site are, therefore, likely to support an assemblage of generalist and widespread species only. As such, the local breeding bird assemblage supported by the site is considered to be of no more than site level importance.

Bats

H4.37 During the updated desk study completed in May 2019, SEWBReC returned 155 records for bats (not including Annex II bat species) the most pertinent of which include a brown long-eared bat (*Plecotus auritus*) roost 300m south-west of the EIA site, a common pipistrelle (*Pipistrellus pipistrellus*) and brown long-eared bat (*Plecotus auratus*) roost 1.8km north-east of the EIA site and a soprano pipistrelle bat (*Pipistrellus pygaemus*) maternity roost 510m south-east of the EIA site. In addition to other low status roosts for these species, records of common pipistrelle, soprano pipistrelle, brown long-eared, *Myotis* sp. and noctule (*Nyctalus noctula*) bats were recorded within 2km of the EIA site more generally.

H4.38 With respect to Annex II bats species, 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 EIA site. Furthermore, seventy-five records of lesser horseshoe bat (*Rhinolophus hipposideros*), including 60 records for their roosts, dating from 2000 to 2018 were returned from within the 6km search radius. No records were returned from the EIA site, with just two records identified within a 2km search area, one of which was for a lesser horseshoe night roost 1.98km from the EIA site.

Bat Roost Assessment: Trees

H4.39 A ground level assessment of all trees within the EIA 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. All other on-site trees were deemed to have negligible potential to support roosting bats as they lacked any features and were immature to semi-mature.

H4.40 During the initial ground level assessment of trees completed on 09 May 2019 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.

H4.41 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) and provided within Appendix G1 of this ES. The numbering of the trees reported in Table H4.4 below is therefore consistent with the Tree Constraints Plan. Some of the trees were reported as part of a larger tree group and, therefore, have not been individually categorised. The findings of the initial ground level tree assessments are summarised in Table H4.4.

Tree ID	Species	Description (including BS5837:2012 Tree Survey Categorisation and key features)	Bat Roost Potential May 2019
T94	Lawson cypress	Cat B. The cypress is covered in ivy.	Low
T97	Apple tree	Cat U. The base of the tree is rotten with three rotten areas observed below 1m height.	Moderate
T100	Foxglove tree	Cat A. Tree with clear high roosting bat potential. One woodpecker hole observed as well as two limb holes. The tree is partly covered with ivy.	High
T105	Horse chestnut tree	Cat U. One rot hole observed at the base as well as flaking bark along the main limb reaching into the crown area.	Moderate

H4.42 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 03 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 the survey effort. The findings of the aerial tree assessments are summarised in Table H4.5.

Table H4.5 Aerial Inspection Results, September 2019

Tree ID	Species	Description (including BS5837:2012 Tree Survey Categorisation and key features)	Bat Roost Potential September 2019
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.	Negligible
T97	Apple	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.	Low
T100	Foxglove	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. A knot-hole is present on south-west facing limb	Moderate

a further nine buildings were assessed as having low suitability to support roosting bats (B5-7 and B9-15) with buildings B9 and B12-15 upgraded from negligible to low suitability to support a bat roost. No signs of roosting bats were found during the bat building assessment update.

H4.48 The results of the update bat building assessment are summarised in Table H4.5 and further detailed at Appendix H1.

Table H4.5 Preliminary Building Inspection Results, May 2019

Building ID	Description	Evidence of Bats/Potential Roost Features	Bat Roost Potential
B1/B2: Dolaucothi/ Camelot Student Block	Three storey student accommodation. Two identical L-shaped compartments form the complete structure. The external walls are made of red brick with cavity walls. The roof is corrugated metal and lined with bitumen felt. The soffit boxes are made of timber.	The roof is generally in good condition with intact bitumen felt cover. The soffit boxes have some ventilation shafts missing which provide internal access. Rooks were observed nesting in some of them. Light ingress was visible within the loft void coming through the gap created for the wiring of the external flood light. No signs of bats.	Confirmed bat roost in 2016 by Ecosulis. No evidence of roosting bats identified during internal inspection in 2019.
B3/B4: Blaenavon/ Abergavenny Student Block	The buildings are almost identical to B1/B2. The materials are the same as listed above.	As with B1/B2 buildings, B3/B4 also have missing ventilation shafts as well as gaps observable through the external walls around flood lights. No signs of bats. No nesting birds.	Moderate summer roosting and negligible hibernation potential. No change in ecological baseline.
B5: Nursery (Security) Building	External walls are made of un-rendered brick with natural slate roof tiles and clay ridge tiles.	Some roof tiles are slightly raised, providing access opportunities internally. The loft void is well insulated with a type of paper lining and rock wool laid on the floor of the ceiling. There appears to be no potential access directly into the loft void apart from the space between the roof lining and roof tiles. No signs of bats. No nesting birds.	Low summer roosting and negligible hibernation potential. No change in ecological baseline.

B9: Toilet Block	The building walls are made of brick with no render covering them. The roof is made of natural slate tiles.	Natural slate tiles are raised in several places providing internal access, especially along the roof edges above the gable ends. Timber barge and fascia boards are well fitted; however, the north-western gable end is covered with light ivy. There is no access into the loft void from inside the building. No signs of bats. No nesting birds.	Low summer roosting and negligible hibernation potential. Change in ecological baseline. Assessed as negligible potential during 2015/2016.
B10: TJ Webley	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. No signs of bats. No nesting birds.	Low summer roosting and low hibernation potential. No change in ecological baseline.
B11: Ty Hywel	The external walls are made of stone without render. The roof is natural slate material with clay ridge tiles similar to the Ty Hywel building.	The building is of a similar structure to that of Ty Hywel. 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. No signs of bats. No nesting birds.	Low summer roosting and low hibernation potential. No change in ecological baseline.

a soprano pipistrelle bat was also observed emerging from building B16 at 21:11 specifically from a crevice located above a window lintel.

H4.54 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.

Investigations of Bat Foraging/Commuting Activity

H4.55 Bat foraging and commuting activity recorded during the course of the transect and automated detector surveys undertaken between April and August 2019 is summarised below with further detailed information provided at Appendix H1.

H4.56 Activity surveys undertaken by Ecosulis in September and October 2015 identified moderate levels of pipistrelle (*Pipistrellus sp.*) activity with relatively high concentrations recorded along the northern boundary of the EIA site. Species recorded include common pipistrelle, soprano pipistrelle and noctule.

H4.57 This is largely consistent 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 EIA site during the course of the activity surveys. During the automated detector surveys, the vast majority of this behaviour (average 76% of Anabat recordings) related to common pipistrelle bat. Noctule, soprano pipistrelle and myotid bats were occasionally recorded, comprising 24% of all Anabat calls recorded during April, May, June, July and August. Long eared sp. and Nyctalus/Eptesicus sp. have only been recorded during June accounting for less than 1% of all anabat recordings. The range and proportion of species/species groups recorded during the manual transect surveys was broadly similar to that described above with regards to the automated surveys. A minimum of four species were recorded during the manual transect surveys. Overall, relatively low levels of bat activity were recorded, predominantly along the northern and eastern boundaries of the EIA site, the latter being contiguous with broadleaved woodland and unmanaged grassland. Foraging activity was also recorded in association with the southern boundary and former playing field. Activity is dominated by common pipistrelle with occasional registrations from soprano pipistrelle. Registrations of Myotis and noctule was also recorded within the south of the EIA site in May 2019.

Evaluation

H4.58 An evaluation of the bat assemblage at the EIA site is provided below, with reference to the relative abundance and distribution of each bat species (with reference to the most up-to-date information on local and national species distribution[2,3] and population trends[4] available at the time of writing).

H4.59 Common pipistrelle bats are common and widespread across the UK, representing the most and second most abundant species in the UK respectively. Whilst having suffered significant historic

[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
[3] http://monmouthshirebatgroup.org/Bats-in-Monmouthshire.php
[4] Bat Conservation Trust, 2018. The National Bat Monitoring Programme. Annual Report 2017

Importance whilst Leisler's bats supported by the EIA Site are not considered to be significant beyond a Site context.

H4.65 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 EIA site is considered to be of local importance to the local bat population.

Badger

H4.66 Five records for badger (*Meles meles*) were received during the update desk study; two related to setts and three to road mortalities. The closest record dated from 2016 and was for a road mortality on the A4042 located 2.1km to the west of the EIA site.

H4.67 No evidence of badger activity was recorded by EDP during the Extended Phase 1 Habitat Survey undertaken in May 2019 and neither was any activity identified during surveys undertaken in 2015 and 2016 by Tyler Grange and Ecosulis.

H4.68 Dense scrub, poor semi-improved and amenity grassland does provide suitable foraging habitat for this species, albeit scattered in its distribution, whilst adjacent broadleaved woodland provides suitable cover for badger and their setts.

H4.69 In the absence of active badger setts on-site, the EIA site is considered to be of negligible importance to this species.

Dormouse

H4.70 SEWBReC returned 30 records for dormouse (*Muscardinus avellenarius*) within 2km of the EIA site. All of the records originate from the eastern side of the River Usk, with the EIA site being located on the western side of the River Usk.

H4.71 Suitable dormouse habitat on-site is limited to dense scrub and woodland delineating the eastern boundary of the EIA site. Such features are, however, highly fragmented across the site with no/limited connectivity to suitable habitat within the wider landscape. Although a desk study returned records of dormouse within 2km of the EIA site, such records are located beyond the River Usk which is considered a barrier to the dispersal of dormouse between the site and wider landscape.

H4.72 Given the sub-optimal nature of habitats present on-site for dormouse, the EIA site is considered to be of negligible importance to this species.

Otter and Water Vole

H4.73 A desk study returned several records for otter (*Lutra lutra*) associated with the Afon Llwyd 750m north of the EIA site and River Usk east and south of the EIA site. With respect to water vole (*Arvicola amphibicus*), only one record within 2km of the EIA site was returned circa 1.9km north.

H4.74 There is no suitable habitat for either species on-site or adjacent, such that both species are presumed absent. As such, the EIA site is considered to be of negligible importance to otter and water vole.

undertaken by EDP in April 2019. Records for stoat (*Mustella erminea*) and polecat (*Mustela putorius*) within 2km of the EIA Site were also returned, the latter of which relates to road casualties recorded over 1km away. All three species are of Principle Importance in Wales and are relatively widespread. Whilst suitable habitats exist on site for these species, such habitats also predominate the wider landscape beyond. These species are therefore not considered to be significant beyond a site context.

H4.82 With respect to invertebrates, historical records (pre-1950s) were returned for marsh fritillary (*Euphydryas aurinia*) (an European Protected Species) and small pearl bordered fritillary greater than 2km south and north of the EIA site respectively. Other records relate 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.

H4.83 Overall, the EIA 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.

H4.84 With respect to notable plant species, records are largely limited to bluebell and Deptford pink (*Dianthus 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, however, habitats present within the EIA site are considered likely to support common and widespread species only.

Species IEFs

H4.85 Species identified as requiring consideration within the ES due to their identification as IEFs valued at or above Local level (with the exception of breeding birds and common reptiles, which are included for consideration due to legal implications) are summarised below in Table H4.6.

Table H4.6 Summary of Species IEFs requiring consideration within the EcIA

IEF	Level of Importance	Distance from Site
Breeding Birds	Site	On-site
Bats (commuting/foraging)	Local	On-site
Bats (roosting)	Local	On-site (B1/2, B3/4 & B16)
Common reptiles (Slow-worm)	Site	On-site

Future Baseline

H4.86 It is anticipated that if the proposed development did not proceed, land practices would remain the same with the majority of the EIA site falling into disuse. Without management, dense scrub and shrubs are likely to encroach across the grassland habitat and hardstanding, whilst buildings will likely degrade, and deteriorate, which could potentially make them more suitable for use by bats and nesting birds.

During Construction

H5.6 Construction is proposed to span across circa 5 years from 2022 to 2027 at a build rate of 40 dwellings per annum. Potential significant effects identified which could arise as a result of the construction in the absence of mitigation include the following:

- Effects of direct habitat loss due to land take upon habitats and species;
- Indirect effects to designated sites, habitats and species due to habitat degradation and damage;
- Effects of light, noise and human disturbance to habitats and species;
- Increased risk of collision to species; and
- Pollution of groundwater and surface water flows.

Statutory Designations

H5.7 NCC's Adopted Local Development Plan was previously subject to a Habitat's Regulation Assessment (HRA) in 2015[9] which considered the likely significant effects to arise through policies inherent within the LDP including Policy H1 (Housing Sites) on European sites within the Zone of Influence, such as the Severn Estuary Ramsar/SAC/SPA and River Usk SAC.

H5.8 The HRA identified several potential effects of allocated sites on the Severn Estuary Ramsar/SAC/SPA and River Usk SAC including the following:

1 Barriers to migration/movement for fish species and mammals;

2 Flow depletion/abstraction;

3 Habitat loss;

4 Disturbance including recreation, noise, lighting and vibration;

5 Water quality and diffuse pollution;

6 Increase in suspended solids;

7 Aerial pollution; and

8 Coastal squeeze.

H5.9 The findings of the assessment concluded that the NCC's LDP, in implementation will not have a likely significant effect on the European site(s) considered as part of the HRA screening alone or in combination and thus did not require a full Appropriate Assessment (AA) under the Habitats Regulations. Nonetheless, the site considered within this EIA was not included within the LDP during the HRA process and still requires consideration at the project level.

H5.10 The proposal is, however, located 1.1 km north and west of the River Usk SAC and 7.3km north of the Seven Estuary Ramsar/SAC/SPA. Given the distance and spatial separation of the EIA site from statutory designations, combined with the localised scale/nature of proposed development, no likely significant effects arising from disturbance, barriers to movement, habitat loss, abstraction, or coastal squeeze are anticipated on designated sites.

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[9] Newport City Council/Atkins Limited (2015) Habitats Regulations Assessment Screening Report. Available at: http://www.newport.gov.uk/documents/Planning-Documents/LDP-2011-2026/Habitats-Regulation-Assessment--final.pdf

the winter months. This could potentially impact upon the woodland and the species using it (see below). The proposed development has, however, been designed to protect the woodland from the development footprint by adequately offsetting from such features through retention, enhancement and creation of suitable habitat buffers. Disturbance impacts on adjacent semi-natural broadleaved woodland are considered to be negative, temporary and reversible at the site level.

H5.18 With respect to mature and semi-mature trees, trees G18, T39 and T100 (each with a TPO) will be felled to facilitate construction. The majority of on-site tree resource will, however, be retained and integrates into emerging landscape proposals. Nevertheless, impacts associated with loss of TPO trees is considered to be negative, permanent, and irreversible at the local level.

H5.19 With respect to retained tree standards, there remains the potential for physical damage and/or indirect degradation during construction due to the proximity of built development and/or proposed landscaping works. In the absence of mitigation, the extent and magnitude of such, medium-term, potentially frequent impacts (i.e. duration of the construction phase), could be permanent and potentially irreversible. The significance of such negative effects upon these retained features is considered to be of local level significance.

Species IEFs

Birds

H5.20 The loss and degradation of potential bird nesting habitats during construction will primarily be restricted to dense scrub and shrub, scattered trees and buildings throughout the EIA site. In respect of the magnitude of habitat loss and degradation, such impacts are considered negative, permanent, irreversible and of significance at the site level only.

H5.21 The legal protection afforded to birds and their nest (their eggs and young) is considered inherent mitigation to ensure no effects relating to direct harm/injury arise in respect of the breeding bird assemblage. Therefore, negligible impact is predicted.

H5.22 In the absence of mitigation, disturbance of nesting and foraging habitat for the breeding bird assemblage through light spill, noise, visual and human disturbance during construction could potentially occur, particularly in areas adjacent to building demolition (i.e. semi-natural broadleaved woodland), or where scrub clearance is occurring. Nesting birds sensitive to such disturbance could abandon nests and breeding territories and become displaced from other populations. Birds will be most sensitive to noise and visual disturbance occurring in the vicinity of habitats during the breeding bird season, though will likely return to such suitable habitat upon cessation of such disturbances. In absence of mitigation, negative effects arising from visual/noise/human disturbance during the construction phase upon birds are considered temporary, reversible and of site level significance only.

Bats

H5.23 With respect to buildings present within the EIA site, update dusk emergence/dawn re-entry surveys undertaken by EDP identified a low status day roost for common pipistrelle bat in buildings B1/2, B3/4 and B16. This is in addition to a low status roost for soprano pipistrelle within building B16. A low status roost for *Myotis sp*. was previously identified by Ecosulis in 2016. No evidence of this species roosting within the building was, however, recorded during 2019.

H5.24 B1/2 and B3/4 will be demolished to facilitate redevelopment of the EIA site resulting in loss of common pipistrelle low status roosts of local importance and a potential *Myotis sp*. bat roost. Although B16 will be retained, the building will be renovated resulting in potential

Reptiles

H5.31 Land take associated with the development proposals will result in the permanent loss of semi-natural habitat, with habitat losses confined predominantly to the interiors of the EIA site dominated by amenity grassland, scrub and shrub planting. Such habitat is, however, scattered and fragmented in its distribution, surrounded by existing hardstanding and buildings and, therefore, considered unlikely to support a common reptile population. In contrast, poor semi-improved grassland within the north-east corner of the EIA site is considered more suitable for a reptile population, being more extensive with greater structural and habitat diversity and, furthermore, is contiguous with off-site woodland habitat. Indeed, slow-worm identified during the survey effort was associated with these habitats. Poor semi-improved grassland will, however, be retained in its entirety. As such, the reduction of available habitat to a reptile population is considered negligible.

H5.32 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 habitat important for a common reptile population. 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 site level significance only.

H5.33 Increased levels of traffic movements by vehicles, machinery and plant throughout the construction phase could increase the potential risk of road casualties upon this species, particularly when constructing access roads and removing vegetation across which species disperse and forage. Such impacts resulting in harm/injury to a slow-worm population are considered negative, permanent and irreversible at the site level.

During Operation

H5.34 Potential significant effects identified which could arise as a result of the operation of the proposed development in the absence of mitigation include the following:

1 Effects of light and noise/visual/human disturbance to designated sites, habitats and species;

2 Increased risk of collision and predation to species; and

3 Alteration of surface water run-off / groundwater flow / site drainage.

Statutory Designations

H5.35 The HRA undertaken by NCC considered the impact of a number of vulnerabilities on the Severn Estuary Ramsar/SAC/SPA and River Usk SAC/SSSI, which are pertinent during the operational phase of the proposed development including atmospheric pollution, water quality and diffuse pollution and an increase in suspended solids. Although some distance from the EIA site, the River Usk and Severn Estuary are hydrologically connected to the Afon Llwydd and several land drains within 400m of the EIA site. However, 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.

H5.36 Specifically, LDP Policy SP4 (Water Resources) requires for development to minimise water consumption, protect water quality during and after construction, and result in no net increase in surface water run-off through the sustainable management of water resources including: the use of sustainable drainage systems; the reuse of water and reduction of surface water run-off through high quality design; consideration of the impact upon finite water resources; and

including woodland, scrub and trees along the eastern boundary of the EIA site and within its north-east corner, whilst new planting along site boundaries, proposed within a landscape strategy, will further offset the development footprint away from such IEFs.

H5.45 Increased predation of wildlife may also arise following occupation as a result of cat ownership across the development. The unmitigated impact of increased predation upon birds can be characterised as a negative effect which is probable to result, with such effects expected to be permanent and irreversible. The significance of such effects upon species is therefore considered to be of site level significance.

Bats

H5.46 In relation to bats, an increase in disturbance arising from increased human presence, vehicular use noise and light originating from residential dwellings may affect the behaviour of species utilising those habitats on-site. The usage of artificial lighting across the EIA site could also result in detrimental effects upon bat species due to light spill upon adjacent habitats in use as foraging and commuting corridors. Such effects could result in the abandonment of roosting sites and displacement of dispersal routes across the proposed development, and may also result in the isolation of, and reduced interactions between, populations necessary to maintain genetic diversity. The continued ecological functionality of habitat corridors on-site may therefore be reduced. In the absence of mitigation, negative effects upon bat IEFs are considered to be negative, permanent, and irreversible. Such effects are considered to be of local significance. However, suitable bat habitat is already subject to some level of disturbance given the location of the EIA site within a built-up area of Newport subject to background levels of lighting, such that impacts are considered much reduced.

H5.47 Increased predation upon bats, particularly at roost sites, may also arise following occupation as a result of cat ownership across the development. The unmitigated impact of increased predation upon species can be characterised as a negative effect which is probable to result, with such effects expected to be permanent and irreversible. The significance of such effects upon species is therefore considered to be of site level significance.

Reptiles

H5.48 Increases in visual/noise/human disturbance and lighting could result in negative effects upon reptiles, although such impacts are considerably reduced given the retention and enhancement of suitable grassland and scrub habitat within the north-east corner of the EIA site. In the absence of mitigation, negative effects upon reptiles are thus considered negative, permanent, irreversible, and of significance at the site level.

H5.49 Increased vehicular traffic arising following occupation could also increase levels of road-kill upon reptile individuals moving across the EIA site. The unmitigated impact of increased risk of collision to reptiles can be characterised as a negative impact, with such impacts expected to be permanent and irreversible. The significance of such impacts upon species is considered to be of significance at the site level.

of landscape, arboricultural, and biodiversity elements in order to ensure that a holistic approach is adopted.

H6.4 The proposed further mitigation measures in respect of the potentially negative effects arising during the construction and occupation of the completed development are described below.

During Construction

H6.5 All necessary ecological surveys are considered current at the time of submission, however, where relevant and depending on development timescales and phasing, certain detailed species surveys may require updating prior to commencement of the relevant phase of development. The findings will be used to inform the measures set out below.

H6.6 Detailed measures to protect habitats and species during the construction phase have been set out within a CEMP to be submitted with a planning application whilst a detailed mitigation strategy with respect to bats will be covered within future EPS licence applications to NRW as required

H6.7 In general, the CEMP includes mechanisms to ensure the sensitive siting of work compound(s) and storage areas, including the storage of any fuel, chemicals, plant or machinery, sensitive clearance of the EIA site and the use of artificial lighting (including security lighting). =

Designated Sites

H6.8 To protect water quality of the Afon Llwyd and associated land drains within 200m of the EIA site, which in turn are hydrologically connected to the River Usk SAC/SSSI and Severn Estuary Ramsar/SPA/SAC, appropriate pollution control measures will be employed in accordance with the relevant Pollution Prevention Guidelines (PPGs) published by the Environment Agency[10], namely PPG1 'General guide to the prevention of pollution', PPG5 'Works and maintenance in or near water', PPG6 'Pollution prevention guidance for working at construction and demolition sites', and PPG21 'Pollution incident response planning', to ensure that detrimental effects on nearby watercourse as a result of surface run-off, spillage and pollution arising throughout the construction phases are avoided.

H6.9 **Habitats IEFs**Protective fencing will be erected as recommended within *BS5837: 2012 Trees in relation to design, demolition and construction* to physically protect retained habitats on-site with establishment of Ecological Protection Zones (EPZs)/. Protective fencing will incorporate the full root protection area of the feature to be retained and will be protected and maintained throughout the duration of all site enabling and pre-construction activities.

H6.10 No works (other than planting), including the storage of materials, plant and machinery, will be carried out within or immediately adjacent to all areas of protective fencing/areas marked for protection as described above, so as to ensure no detrimental impacts to sensitive features arising from physical damage and/or pollution. The digging of trenches and pits for new tree and scrub planting adjacent to areas of protective fencing, where this lies inside root protection areas, will be carried out by hand only, in accordance with best practice guidance as stipulated within *BS 5837:2012*.

H6.11 In addition, construction will be limited to daylight hours as far as possible to mitigate effects of increased visual and noise disturbance, with the use of temporary, artificial lighting avoided

[10] PPGs were withdrawn in December 2015; however they remain the main source of information on good practice in Wales with respect to guidance on pollution prevention. A replacement guidance series, comprising Guidance for Pollution Prevention (GPPs), are currently in development.

'soft' felling methodology by a suitably qualified arboricultural contractor with experience of working with bats, following the advice of the suitably qualified and licensed ecologist and supervised where necessary.

H6.19 Given the absence of bat roosts identified within buildings B5-B15 present across the EIA site during the 2015/2016 surveys and update 2019 surveys, no constraints to the proposed development are anticipated such that there is no requirement to obtain a development licence from NRW prior to the proposed development of the EIA site. Nevertheless, even where update surveys confirm continued absence of a roost, a precautionary approach to demolition of buildings B5-15 is advised. Works to the roofs, soffits, bargeboards, fascias and other potential roosting features should ideally be undertaken between October to March so as to avoid the main bat roost and bird breeding seasons. Should this not be practicable, then pre-commencement checks carried out by a suitably qualified ecologist will be required immediately prior to commencement of works (see below).

H6.20 Contractors carrying out the works should be warned of the possible presence of roosting bats and nesting birds and of their protected status. In the event of any bats (or occupied bird nests) are found during works, then all works should cease in the affected area until advice from a suitably qualified and licensed ecologist is sought.

H6.21 Update surveys undertaken during 2019 did, however, identify a common pipistrelle day roost in B1/2, B3/4 and B16 and soprano pipistrelle day roost in B16. No evidence of roosting *Myotis sp*. was identified in B1/2 during update surveys. As such, a development licence from NRW will be required prior to the proposed development of the EIA site. In general, demolition works will necessarily be confined to the period 01 September to 31 March of any one year to avoid the main bat summer roosting season unless otherwise approved within the future NRW Development Licence. Prior to commencement of demolition works, suitable bat boxes will be installed on suitable mature trees present along the eastern woodland boundary to be retained following the advice of a suitably qualified ecologist. These will act as suitable receptor sites for bats in the unlikely event that any individuals are found and/or displaced during the demolition works and to compensate for roost loss arising as a result of demolition of the building. Soft-stripping of any features deemed to have potential for bats will be undertaken under the supervision of the named ecologist and/or accredited agents/assistants listed on the Development Licence. Contractors will remove all fascias, bargeboards, soffits, roof tiles, etc. by hand, carefully checking for any evidence of bats. In addition to the bat boxes installed on trees, further compensatory measures for roosting bats will be provided across the EIA site in the form of integrated bat boxes within the fabric of new or retained buildings, suitable for crevice dwelling bats.

H6.22 Felthorpe House will, in contrast, be retained as part of the planning proposals for the EIA site, albeit subject to conversion/refurbishment. As such, the loft space within the building will be enhanced to provide a bat loft space which will be restricted to prevent disturbance. The mitigation will ultimately be dependant on the findings of the update survey effort, however, bat roost features may include the inclusion of bat access ridge tiles installed within the fabric of the building to provide access into the loft space as well as the cavity between roofing tiles and the loft space. The cavity will be created by placing sarking board between the rafters of the loft, against the felt, creating a 20–50mm gap between them. In addition, lifted tiles will be present across the roof to provide further opportunities for crevice-dwelling bats. The existing loft dimensions should be maintained.

Reptiles

H6.23 Common reptiles will be protected throughout the construction phase through the adoption of precautionary measures during site clearance, ensuring harm/injury to such species are avoide.

Habitat IEFs

H6.28 Land take associated with built development is predominantly associated with hardstanding and the footprint of existing buildings with minor loss of semi-natural habitat comprising amenity grassland, shrub planting and trees. The Landscape Strategy has, however, sought to compensate for such losses through the retention and enhancement of poor semi-improved grassland within the north-east corner of the EIA site, albeit for land take associated with the provision of pedestrian links and natural play areas. This is in addition to the retention and enhancement of grassland along the southern boundary of the EIA site and within the west, as illustrated within the Landscape Strategy provided at Appendix H3.

H6.29 To maximise the botanical value and further enhance the carrying capacity of such habitats to be retained, restoration and enhancement measures will include the supplementary seeding of species-poor areas, where appropriate. This will be sensitively managed in the long-term to maximise the value of foraging, dispersal, breeding and hibernation resources for protected species, including slow-worm through the implementation of a sensitive hay cutting regime, so as to promote a structurally diverse and species-rich grassland sward whilst ensuring the control of scrub encroachment. Such measures will also benefit the local bat assemblage, in addition to common reptiles, nesting birds and invertebrates.

H6.30 Habitat creation is also intended on-site, including the creation of sustainable drainage features (swales) along the boundaries of the construction footprint that will be planted with appropriate native wetland flora, so as to diversify habitats suitable for protected species. Woodland habitat along the eastern boundary of the EIA site will also be enhanced through appropriate management of this feature with additional woodland planting implemented within adjacent grassland habitat.

H6.31 This is in addition to the provision of extensive new tree, hedgerow and shrub planting including the transplanting of suitable specimens of native, broadleaved trees and shrubs otherwise proposed for loss to suitable receptor sites across the EIA site where appropriate. New shrub and hedgerow planting will focus on site boundaries, creating and strengthening wildlife dispersal corridors.

H6.32 Such planting is considered to sufficiently compensate for habitat losses anticipated, whilst ensuring the protection and further enhancement of retained habitats adjacent through strengthening and broadening areas of existing woodland, treelines and hedgerows to maximise habitat function and connectivity across the EIA site and wider landscape. This will be in addition to the sensitive management of such habitats and features in order to increase their resilience and mitigate long-term disturbance effects.

H6.33 It is further recommended for such planting to utilise a diversity of native species, preferably of local provenance, within any future planting mix, and to include species which bear fruit and are nectar and pollen rich.

H6.34 In addition, the scheme should ensure the implementation of a sensitive lighting strategy to ensure no/limited light spill occurs within close vicinity of boundary woodland. 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 shields and/or hoods where required. Such measures could be secured via planning condition attached to any future consent.

H6.35 The proposed measures described above would ensure there is an overall net gain in habitats of ecological value within the EIA site, thereby potentially resulting in significant positive effects at a Site to Local level.

H7.0 Residual Effects

H7.1 A summary of the residual effects during construction and after completion is provided in Tables H7.1 and H7.2.

During Construction

H7.2 Subject to those mitigation measures outlined above, and further detailed within the CEMP and Landscape Strategy to be submitted within a planning application, and within those method statements prepared as part of future NRW development licences relating to European Protected Species, residual effects anticipated during the construction phase with respect to Habitat and Species IEFs have been reduced to negligible levels, as summarised within Table H7.1.

Table H7.1 Residual Ecology Effects During Construction

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.	Negative, temporary, reversible (Local level)	The construction phase will adhere to those sensitive working methodologies and pollution prevention guidelines set out within the CEMP.. Further protection will be afforded through implementation of a sensitive drainage strategy.	Negligible
River Usk SAC/SSSI	Surface/ground water run-off and pollution of the Afon Llwyd which could transfer downstream to the River Usk and Severn Estuary.	Negative, temporary, reversible (Local level)	The construction phase will adhere to those sensitive working methodologies and pollution prevention guidelines set out within the CEMP.. Further protection will be afforded through implementation of a sensitive drainage strategy.	Negligible
Afon Llwyd/Afon Llwyd Grasslands SINC (County Value)	Surface/ground water run-off and pollution of the Afon Llwyd which	Negative, temporary, reversible (Local level)	The construction phase will adhere to those sensitive working	Negligible

			prevention guidelines set out within the CEMP to ensure full protection of the valued resource.	
Breeding birds (Site Value)	Direct habitat/building loss used for breeding and shelter.	Negative, permanent, irreversible (Site level)	Sensitive timing of works to avoid the nesting bird season. Provision of new tree, hedgerow and shrub planting to compensate for habitat loss.	Negligible
	Habitat degradation and damage to retained habitats used for breeding and shelter.	Negative, permanent, irreversible (Site level)	The construction phase will adhere to sensitive working methodologies including the implementation of protective fencing to ensure no adverse impacts to retained habitats will arise which could affect breeding birds.	Negligible
	Direct harm/injury.	Negligible (subject to legal compliance)	Protection of habitats and sensitive timing of works as detailed within the CEMP.	Negligible
	Disturbance impacts due to elevated noise and lighting. Disturbance impacts upon breeding individuals due to erratic visual and noise disturbances during works.	Negative, temporary, reversible (Site level)	Protection of habitats and sensitive timing of works. 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
Roosting/ foraging/ commuting bats (Local value)	Loss of a common pipistrelle, soprano pipistrelle and potential Myotis summer day roost. Potential killing/injury during	Negative, permanent, irreversible (local level)	Adhere to sensitive working methodologies set out within the CEMP and future derogation licence prepared in relation to bats, to ensure full protection of the	Negligible

Common reptiles: Slow-worm (Site level)	Habitat degradation and damage during construction and landscaping works adjacent to retained grassland.	Negative, permanent, irreversible (Site level)	Sensitive clearance measures will be followed to ensure no harm to common reptiles.	Negligible
	Increased risk of collision from traffic due to increased vehicle, machinery and plant movement across the site and adjacent to sensitive habitats.	Negative, permanent, irreversible (Site level)	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.Additional sensitive methodologies set out within the CEMP to control traffic and movement will further reduce the likelihood of such impacts occurring.	Negligible

Receptor	Nature of Effect	Sensitivity/ Significance/ Magnitude with Inherent Mitigation	Additional Mitigation Measure(s)	Residual Effect Sensitivity/ Significance/ Magnitude After Mitigation
			field.	
Afon LLwyd/Afon Llwyd Grasslands SINC (County 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
Semi-natural Broadleaved Woodland (Local value)	Disturbance from lighting and noise.	Negative, irreversible, permanent (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.	Negligible, possible minor beneficial with appropriate landscaping
Scattered Trees (Local value)	Disturbance from lighting and noise.	Negative, irreversible, permanent (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.	Negligible, possible minor beneficial with appropriate landscaping

Receptor	Nature of Effect	Sensitivity/ Significance/ Magnitude with Inherent Mitigation	Additional Mitigation Measure(s)	Residual Effect Sensitivity/ Significance/ Magnitude After Mitigation
	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 bat boxes for installation upon trees in addition to roost features to be integrated into buildings.	Negligible
Common reptiles: slow-worm (Site value)	Indirect disturbance (light spill, visual and noise)	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.	Negligible
	Increased risk of collision from traffic due to increased vehicle movement across the site, and adjacent to sensitive habitats.	Negative, permanent, irreversible (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.	Negligible

H9.0 Abbreviations & Definitions

1 BAP – Biodiversity Action Plan
2 NCC - Newport City Council
3 CIEEM - Chartered Institute of Ecology and Environmental Management
4 CEMP - Construction and Environmental Management Plan
5 LDP –Local Development Plan
6 EcIA – Ecological Impact Assessment
7 ECW – Ecological Clerk of Works
8 EPZ – Ecological Protection Zone
9 ES – Environmental Statement
10 EIA – Environmental Impact Assessment
11 HAP – Habitat Action Plan
12 HRA – Habitats Regulations Assessment
13 JNCC - Joint Nature Conservation Committee
14 LNR – Local Nature Reserve
15 LDP – Local Development Plan
16 LBAP – Local Biodiversity Action Plan
17 NRW - Natural Resources Wales
18 PPG – Pollution Prevention Guidelines
19 PPW – Planning Policy Wales
20 POS – Public Open Space
21 SAC – Special Area of Conservation
22 SAP – Species Action Plan
23 SEWBReC - South East Wales Biological Records Centre
24 SINC – Site of Importance for Nature Conservation
25 SPA - Special Protection Area
26 SPG – Supplementary Planning Guidance
27 SSSI – Site of Special Scientific Interest
28 TAN – Technical Advice Note
29 IEF – Important Ecological Feature

USW Caerleon

Technical Appendix H1: Ecology Baseline Report

Prepared by:
The Environmental Dimension Partnership Ltd

On Behalf of:
Redrow Homes (South Wales) Ltd

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Plan EDP 4 Bat Emergence/Re-Entry Survey Results on Buildings B1/2 and B3/4 (edp5601_d023 17 October 2019 GY/LL)

Plan EDP 5 Bat Emergence/Re-Entry Survey Results on Building B16 (edp5601_d024 17 October 2019 GY/LL)

Plan EDP 6 Automated Bat Detector Locations and Transect Route (edp5601_d004 17 October 2019 GY/EM)

Plan EDP 7a April Bat Transect Survey Results 2019 (edp5601_d006a 17 October 2019 LB/EM)

Plan EDP 7b May Bat Transect Survey Results 2019 (edp5601_d007a 17 October 2019 LB/EM)

Plan EDP 7c June Bat Transect Survey Results 2019 (edp5601_d018a 17 October 2019 GY/LL)

Plan EDP 7d July Bat Transect Survey Results 2019 (edp5601_d022 17 October 2019 AG/LL)

Plan EDP 8 Reptile Survey Results (edp5601_d019a 17 July 2019 JTF/LL)

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001c	-	-	-	-
001d	-	-	-	-
001e	-	-	-	-
001f	-	-	-	-

Executive Summary

S1 This Ecology Baseline Report has been prepared by The Environmental Dimension Partnership Ltd (EDP) on behalf of Redrow Homes (South Wales) Ltd (hereafter referred to as 'the Applicant') in relation to the proposed redevelopment of the Caerleon University Campus (hereafter referred to as 'the Application Site').

S2 Detailed ecological assessments of the Application Site were previously undertaken by Tyler Grange in 2015 and Ecosulis during 2015 and 2016. The findings of such work were updated by EDP during 2019 to determine any material changes to those habitats and protected/notable species supported.

S3 An Environmental Statement (ES) including Ecology (Chapter H) has been prepared by EDP on behalf of the Applicant to inform a full planning application and listed building consent for residential development of the Application Site. The proposals include the provision of up to 218 residential units, including new builds and the creation of apartments within listed buildings that are to be retained and converted, as well as associated landscaping and access.

S4 With respect to designated sites, the Severn Estuary Ramsar, Special Protection Area (SPA) and Special Area of Conservation (SAC) is located 7.3km south of the Application Site, whilst the River Usk SAC and Site of Special Scientific Interest (SSSI) is located east and south of the Application Site. There are several non-statutory designated sites within the zone of influence of the Application Site, the most pertinent of which are the Afon Llwyd Site of Interest for Nature Conservation (SINC) located 400m east of the Application Site.

S5 The Application Site is dominated by hardstanding and buildings which are predominantly vacant in addition to areas of amenity grassland and ornamental shrub planting. The north-eastern corner and eastern boundary of the Application Site is characterised by an unmanaged, tussocky grassland sward with scattered non-native and native trees. Such habitats are considered to be of limited/negligible ecological importance although adjacent semi-natural broadleaved woodland and trees with Tree Protection Orders (TPOs) scattered across the Application Site are considered to be of local importance. Habitats within and adjacent to the Application Site provide opportunities for bats, breeding birds, badger (*Meles meles*), common reptiles and notable mammal species including European hedgehog (*Erinaceus europaeus*).

S6 It is considered that there are no obvious 'in principle' (significant) ecological constraints that would preclude development, and which cannot be avoided by good design. Specifically, a masterplan will seek to retain, protect and further enhance sensitive habitats present on and adjacent to the Application Site. In consideration of the confirmed presence of bat roosts within the Application Site, species-specific measures will be devised to ensure the long-term maintenance of these populations at favourable conservation status and which will be implemented in accordance with an approved Development Licence from Natural Resources Wales (NRW). Overall, EDP considers that the scheme is capable of compliance with relevant planning policy for the conservation of the natural environment at all levels, although a full

Section 1
Introduction, Purpose and Context

1.1 This Ecology Baseline Report has been prepared by The Environmental Dimension Partnership Ltd (EDP) on behalf of Redrow Homes (South Wales) Ltd (hereafter referred to as 'the Applicant') in relation to the proposed redevelopment of the Caerleon University Campus (hereafter referred to as 'the Application Site').

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

Site Context

1.3 The Application Site comprises the former Caerleon Campus of the University of South Wales. It is situated at approximate Ordnance Survey Grid Reference (OSGR) ST 33496 91290 and measures approximately 12.7 hectares (ha) in size. The Application Site is situated in the town of Caerleon, circa 1.1km west and north of the River Usk, beyond which is the city of Newport.

1.4 The Application Site is dominated by hardstanding and buildings which are predominantly vacant in addition to areas of amenity grassland and ornamental shrub planting. Such areas are now largely unmanaged with encroaching scrub. Landscaped areas located more centrally within the Application Site are, however, still subject to frequent mowing. The north-eastern corner and eastern boundary of the Application Site is characterised by an unmanaged, tussocky grassland sward with scattered non-native and native trees contiguous with a linear belt of semi-natural broadleaved woodland.

1.5 Located within the town of Caerleon, the wider landscape is dominated by residential housing. A railway line travelling north to south is circa 180m east of the Application Site, beyond which lies open countryside comprising agricultural grassland and woodland units.

1.6 A Proposed Site Plan and Landscape Strategy is provided at **Appendix EDP 1** and **EDP 2** respectively with habitats illustrated at **Plan EDP 1**.

Development Proposals

1.7 The proposals relate to a full planning application and listed building consent for residential development of the Application Site. In brief, proposed development will consist of up to 218 residential units, including new build and the creation of apartments within listed buildings that are to be retained and converted as well as associated landscaping and access. Further

- **Section 3** summarises the baseline ecological conditions (with further details also provided within Appendices and on Plans where appropriate) and identifies and evaluates any pertinent ecological features/receptors that require further consideration through an Ecological Impact Assessment (EcIA); and

- **Section 4** briefly summarises the findings that are relevant to masterplanning and an ecological assessment for the proposed development.

Section 2
Methodology (Update Baseline Investigations)

2.1 This section of the Ecology Baseline Report summarises the methodologies employed in updating the existing ecological baseline for the Application Site. Update survey effort has been undertaken by suitably qualified ecologists using relevant best practice methodologies wherever possible. Reasons for any departure from best practice methodology are given and normally relate to the timing of EDP's commission and/or the availability of access to parts of the site or wider study area. Full details of the techniques and process adopted are, where appropriate, provided within Appendices and Plans to the rear of this report.

Desk Study

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

2.3 An update desk study was undertaken by EDP during May 2019 and involved collating biodiversity information from the following sources:

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

2.4 The desk study involved obtaining the following information:

- International statutory designations (10km radius around the Application Site);
- National statutory designations (2km radius);
- Non-statutory local sites (2km radius);
- Annex II bat species[3] records (6km radius); and
- All other protected/notable species records (2km radius).

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

[1] Species considered of key significance to sustain and improve biodiversity in Wales, as defined under Section 7 of Part 1 of the Environment (Wales) Act 2016
[2] www.magic.gov.uk
[3] Bat species listed in Annex II of the EC Habitats Directive, namely greater horseshoe, lesser horseshoe, barbastelle and Bechstein's bats
[4] Zone of Influence - the areas and resources that may be affected by the proposed development.

Bat Surveys

2.14 The update Extended Phase 1 Habitat survey confirmed the continued presence of several trees with potential to support roosting bats within the Application Site, in addition to 16 buildings. Areas of woodland, the hedgerow network, and grassland habitats present across the Application Site are also considered to provide suitable foraging and commuting habitat for bats.

2.15 The following surveys for bats were therefore undertaken, with reference to national best practice guidelines[6]:

1) Bat Roosting:

   a) Ground level visual assessment of all mature trees for bat roosting potential on 9 May 2019. A ground level visual assessment of onsite trees for bat roosting potential, completed during May 2019. All trees with moderate to high potential for roosting bats, to be impacted by development were then subject to a further detailed aerial inspection on two occasions during September 2019;

   b) Internal visual inspections of onsite buildings associated with Caerleon University Campus for their potential to support roosting bats on 2, 17, 20, 23 and 31 of May 2019; and

   c) Dusk emergence and dawn re-entry surveys of buildings with roosting potential, undertaken between June and August 2019.

2) Bat foraging/commuting activity:

   a) Manual transect surveys conducted on 24 April, 20 May, 26 June and 25 July 2019; and

   b) Automated detector surveys conducted in April, May, June, July and August 2019.

2.16 Full details are provided in **Appendix EDP 6** with survey results illustrated on **Plans EDP 2-7**.

Badger Survey

2.17 Badger (*Meles meles*) activity within the Application Site was recorded during the Extended Phase 1 survey on 9 May 2019. During the survey, any signs of badger activity such as holes, latrines, trails, snuffle holes and hairs on fencing or vegetation were recorded. Where holes of a size and shape consistent with badgers were identified, the following signs of badger activity were searched for in order to determine whether they were currently in active use:

- Fresh spoil outside entrances;

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

undertaken within areas of suitable habitat. The survey involved the use of artificial reptile refugia checked on seven occasions during May 2019.

2.22 Full details of the reptile survey are provided in **Appendix EDP 8** and on **Plan EDP 8**.

Surveys Scoped Out

2.23 **Table EDP 2.2** below summarises other survey types which, while commonly required as part of an ecological appraisal for development sites, were not considered necessary/appropriate in this case.

Table EDP 2.2: Ecology surveys scoped out.

Survey Type	Reasons for scoping out
Breeding Birds	Suitable nesting habitat within the Application Site is limited to scattered trees, dense scrub and buildings. Assessments of trees and buildings for bat roosts provided an opportunity to identify any nesting birds that may be present. Given the nature and distribution of habitats on-site, however, full breeding bird surveys are not considered necessary in this instance.
Dormouse (*Muscardinus avellenarius*)	Suitable dormouse habitat 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, these are located beyond the River Usk, considered a barrier to the dispersal of dormouse between the Application Site and wider landscape.
Otter (*Lutra lutra*) and Water Vole (*Arvicola terrestris*)	There is no suitable habitat for either species onsite. As such, no further survey is recommended.
Great crested newt (*Triturus cristatus*)	A single waterbody was identified onsite but is considered unsuitable for great crested newt due to its artificial nature and poor water quality. One other waterbody within 500m was identified but which is located circa 370m south-west, beyond main roads and residential development. 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 and suitable habitat in the wider landscape.
Invertebrates	The Application Site comprises predominantly hard standing and amenity grassland exhibiting poor structural and botanical diversity and as such is considered unlikely to support a notable invertebrate assemblage. No further survey is recommended in this instance.

Section 3
Results (Baseline Conditions)

3.1 This section of the Ecology Baseline Report summarises current ecological conditions determined through the course of update field-based investigations described in **Section 2**, along with the existing ecology baseline derived from the previous ecological studies as described in **Section 1**. In particular, this section identifies and evaluates those ecological features/receptors considered within this report and which are pertinent in the context of the proposed development. Further technical details are, where appropriate, provided within Appendices and on Plans to the rear of this report.

Designated Sites

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

Statutory Designations

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

3.4 No part of the Application Site is covered by any statutory designations. However, there are several such designations within the Application Site's potential zone of influence. These are the Severn Estuary Ramsar, SPA and SAC which is located 7.3km south of the Application Site and the River Usk SAC and SSSI which is located east and south of the Site and is 1.1km away at its closest point. A summary of the designations is are provided within **Table EDP 3.1** and illustrated at **Appendices EDP 3** and **4**.

Table 3.1: Summary of statutory nature conservation designations within the Application Site potential zone of influence.

Designation	Distance from Application Site (approx.)	Brief Description
International Designations within 10km		
Severn Estuary Ramsar Site	7.3km south	The Severn Estuary is designated a Ramsar Site for: its immense tidal range; presence of unusual estuarine communities, reduced diversity and high productivity; populations of migratory fish; bird assemblages of international importance; and fish species associated with the whole estuarine and river system.

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

Designation	Distance from Application Site (approx.)	Brief Description
Afon Llwyd SINC (C7)	0.4km east	A freshwater tributary of the River Usk that supports an otter population.
Afon Llwyd Grasslands SINC (C12 & C17)	0.6km south-east	Large area of semi-improved marshy and dry neutral grassland used by otter.
Lodge Wood ASNW (C2)	0.6km north-west	Ancient semi-natural woodland.
Trinity View SINC (C4)	0.7km west	Mosaic habitat of scrub woodland and grassland.
Coed y Gatlas ASNW (C6)	0.8km north-west	Ancient semi-natural woodland.
Ponthir Sewage Work SINC (131)	0.8km north	Lowland grassland and woodland with open standing water and wetland.
Hillcroft Field ASNW (C15)	0.8km west	Ancient semi-natural woodland.
Graig Yr Eurych ASNW (C3)	0.9km north-west	Ancient semi-natural woodland.
Flooded Field SINC (C16)	1.0km south	Large flooded fields designated for its bird population which includes lapwing (*Vanellus vanellus*) and redshank.
Moorings SINC (STJ2)	1.0km south-west	Site contains breeding Cetti's warbler (*Cettia cetti*).
St Julians Park SINC (BE1 & C5)	1.2km south	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 north-west	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 south-east	Semi-improved acidic grassland.
Glebelands SINC (STJ1)	1.6km south-west	Former landfill site covered with amenity grassland, woodland and scrub. Forms part of the River Usk corridor.
Pilton Vale West SINC (C11)	1.9km west	Unimproved neutral-grassland with bracken slopes.
Graig Wood ASNW (C1)	1.9km north-west	Ancient semi-natural woodland.
Ancient Semi-natural Woodland (201)	2.0km north	Ancient semi-natural woodland.

Habitats

3.7 Information on habitats within and around the Application Site was obtained during the Update Extended Phase 1 survey undertaken by EDP in May 2019.

3.8 The distribution of different habitat types within and adjacent to the Application Site is

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

Breeding Birds

3.11 Numerous bird records were returned during the desk study, the closest of which relate to areas of residential housing surrounding the Application Site. Records of red listed species[8] include lapwing (*Vanellus vanellus*), spotted flycatcher (*Muscicapa striata*), grasshopper warbler (*Locustella naevia*), linnet (*Linaria cannabina*), black–headed gull (*Chroicocephalus ridibundus*), starling (*Sturnus vulgaris*), bullfinch (*Pyrrhula pyrrhula*), wood warbler (*Phylloscopus sibilatrix*), yellow wagtail (*Motacilla flava*), curlew (*Numenius arquata*) and kestrel (*Falco tinnunculus*). Amber listed species include skylark (*Alauda arvensis*), reed bunting (*Emberiza schoeniclus*), house sparrow (*Passer domesticus*) and song thrush (*Turdus philomelos*). Green listed species include dunnock (*Prunella modularis*).

3.12 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*), hobby (*Falco Subbuteo*) and peregrine (*Falco peregrinus*) amongst others. Such records are predominantly associated with the wider agricultural landscape or otherwise the River Usk.

3.13 Within the Application Site, dense scrub, shrub and tree planting and adjacent broadleaved woodland is considered to provide suitable breeding and foraging habitat for birds. Amenity and poor semi-improved grassland are considered less suitable for breeding, albeit likely offering foraging opportunities. Habitats present onsite are, therefore, likely to support an assemblage of generalist and widespread species. Swifts (*Apus apus*) were recorded to be nesting within the soffit boxes of the Main Building. As such, the local breeding bird assemblage supported by the Application Site is considered to be of **Site** importance.

Bats

Desk Study

3.14 During the desk study completed in May 2019, SEWBReC returned 155 records of bats (not including Annex II bats) the most pertinent of which include a brown long-eared bat (*Plecotus auritus*) roost 300m south-west of the Application Site, a common pipistrelle (*Pipistellus pipistrellus*) and brown long-eared bat roost 1.8km north-east and a soprano pipistrelle (*Pipistrellus pygaemus*) bat maternity roost 510m south-east of the Application Site. In addition to other low status roosts for these species, records of common pipistrelle, soprano

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

Investigations of Bat Roosting – Buildings

Visual Assessment

3.20 Caerleon University Campus comprises a complex of buildings, including the main university building at the centre of the Application Site, a library, a sports hall and several student accommodation blocks which are in good condition. These structures are evenly distributed throughout the Application Site, which a small patch of woodland delineating the eastern boundary of the Application Site and a former playing field located within the south-west corner of the Application Site.

3.21 A visual assessment of onsite 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 (**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.

3.22 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 'hotpsots' of activity around groups of buildings. During the survey, no bats were recorded emerging from or entering the buildings on the Application Site. However, there were records of very early bat activity close to sunset by Felthorpe House (**B16**) in the south-east corner of the Application Site, indicating presence of a roost in close proximity.

3.23 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.

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

3.25 Results of the update visual inspection are largely consistent with existing survey results from 2015/2016 with **B1**/**2**, **B3**/**4**, **B8** and **B16** considered to have moderate potential to support roosting bats whilst **B5**-**7**, **B10** and **B11** were considered to have low potential. In contrast to previous results however, an update assessment considered buildings **B9** and **B12**-**B15** to have low potential to support roosting bats following identification of suitable roosting features (hanging tiles of the gable ends). However, no signs of roosting bats were noted during the internal inspection of these buildings. The remaining buildings onsite (were considered being of negligible potential for summer roosting bats due to lack of suitable access points.

3.32 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.

3.33 This is largely consistent 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 Site during the course of the activity surveys. During the automated detector surveys, the vast majority of this behaviour (average 76% of Anabat recordings) related to common pipistrelle bat.

3.34 Noctule, soprano pipistrelle and myotid bats were occasionally recorded, comprising 24% of all Anabat calls recorded during April, May, June, July and August. Long eared sp. and Nyctalus/Eptesicus sp. have only been recorded during June accounting for less than 1% of all anabat recordings. The range and proportion of species/species groups recorded during the manual transect surveys was broadly similar to that described above with regards to the automated surveys. A minimum of four species were recorded during the manual transect surveys. Overall relatively low levels of bat activity were recorded, predominantly along the northern and eastern boundaries of the Application Site, the latter being contiguous with broadleaved woodland and unmanaged grassland. Foraging activity was also recorded in association with the southern boundary and former playing field. Activity is dominated by common pipistrelle with occasional registrations from soprano pipistrelle. Registrations of Myotis and noctule were also recorded within the south of the Application Site in May 2019.

3.35 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.

Badger

3.36 Five records for badger were received during the update desk study, two related to setts and three to road mortalities. The closest record dated from 2016 and was for a road mortality on the A4042 located 2.1km west of the Application Site.

3.37 No evidence of badger activity was recorded by EDP during the Extended Phase 1 Habitat survey undertaken in May 2019 and neither was any activity identified during surveys undertaken in 2015 and 2016 by Tyler Grange and Ecosulis.

3.38 Dense scrub, poor semi-improved and amenity grassland does provide suitable foraging habitat for this species, albeit scattered in its distribution whilst adjacent broadleaved woodland provides suitable cover for badger and their setts.

3.39 In the absence of active badger setts onsite, this species is considered to be of **Site** importance only.

and suitable habitat in the wider landscape. This species is thus presumed absent and considered to be of **Negligible** importance.

Reptiles

3.48 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.

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

3.50 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 a small slow-worm population within the Application Site. Full details of the number of individuals and peak survey count are given in **Appendix EDP 8**. Slow-worms were associated with habitats along the north-eastern and eastern boundaries of the Application Site. These areas are predominantly represented by tussocky, unmanaged poor semi-improved grassland contiguous with offsite broadleaved woodland and residential gardens.

3.51 Given the small size of the population support, slow-worm is considered important at the **Site** level.

Other Species Potentially Supported

3.52 A desk study assessment returned records for European hedgehog (*Erinaceus europaeus*), the closest being adjacent to the eastern boundary of the Application Site. European hedgehog was also observed nine times during the bat activity surveys undertaken by EDP between May and August 2019. Records for stoat (*Mustela erminea*) and polecat (*Mustela putorius*) within 2km of the Application Site were also returned, the latter of which relates to road casualties recorded over 1km away from the Application Site. All three species are of Principle Importance in Wales and are relatively widespread. Whilst suitable habitats exist onsite for these species, such habitats also predominate within the wider landscape beyond. These species are therefore not considered to be significant beyond a **Site** context.

3.53 With respect to invertebrates, historical records (pre-1950s) were returned for marsh fritillary (*Euphydryas aurinia*) (an European Protected Species) and

Section 4
Summary of Findings

4.1 Based on the baseline investigations described above, the Important Ecological Features pertinent to an Ecological Impact Assessment (EcIA) in respect of the proposed development at the Application Site are identified in **Table EDP 4.1**.

4.2 There are also habitats present within the Application Site which are considered of negligible or low (site-level) importance, including amenity grassland, poor semi-improved grassland, dense scrub, shrub planting, tall ruderal and ephemeral/short perennial vegetation, standing water, buildings and hardstanding. However, such habitats have been taken into consideration in relation to their importance in maintaining populations of protected and/ or notable species.

Table EDP 4.1: Important Ecological Features to be considered within an EcIA.

Important Ecological Feature	Key Attributes	Nature Conservation Value
Statutory/Non-statutory Designated Sites		
Severn Estuary Ramsar/SPA/SAC, SSSI	Designated for its marine and associated habitats supporting significant bird and fish assemblages in addition to otter.	International
River Usk SAC & SSSI	A watercourse designated for presence of Annex I habitats and several Annex II species.	European
Afon Llywd SINC	A freshwater tributary of the River Usk that supports an otter population.	County
Afon Llwyd Grasslands	Large area of semi-improved marshy and dry neutral grassland used by otter.	County
Habitats		
Semi-natural Broadleaved Woodland (Offsite)	Suitable habitat for protected species and a potential dispersal corridor for wildlife in a primarily urban landscape.	Local
Scattered Trees	Several are assigned a TPO and further provides suitable habitat for nesting birds and roosting bats.	Local
Poor semi-improved Grassland	An area of unmanaged, grassland habitat contiguous with offsite habitats including broadleaved woodland and providing suitable habitat for protected species including foraging birds, bats and badger.	Site
Standing Water	A habitat of Principal importance albeit artificial in nature.	Site
Species		
Breeding Bird Assemblage	Habitats likely to support an assemblage of common and widespread bird species utilising the Application Site for nesting and foraging.	Site

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

the environmental dimension partnership

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date	17 JULY 2019
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QA	

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Redrow Homes (South Wales) Ltd

DRAFT

project title
Caerleon University Campus

drawing title
Landscape Strategy

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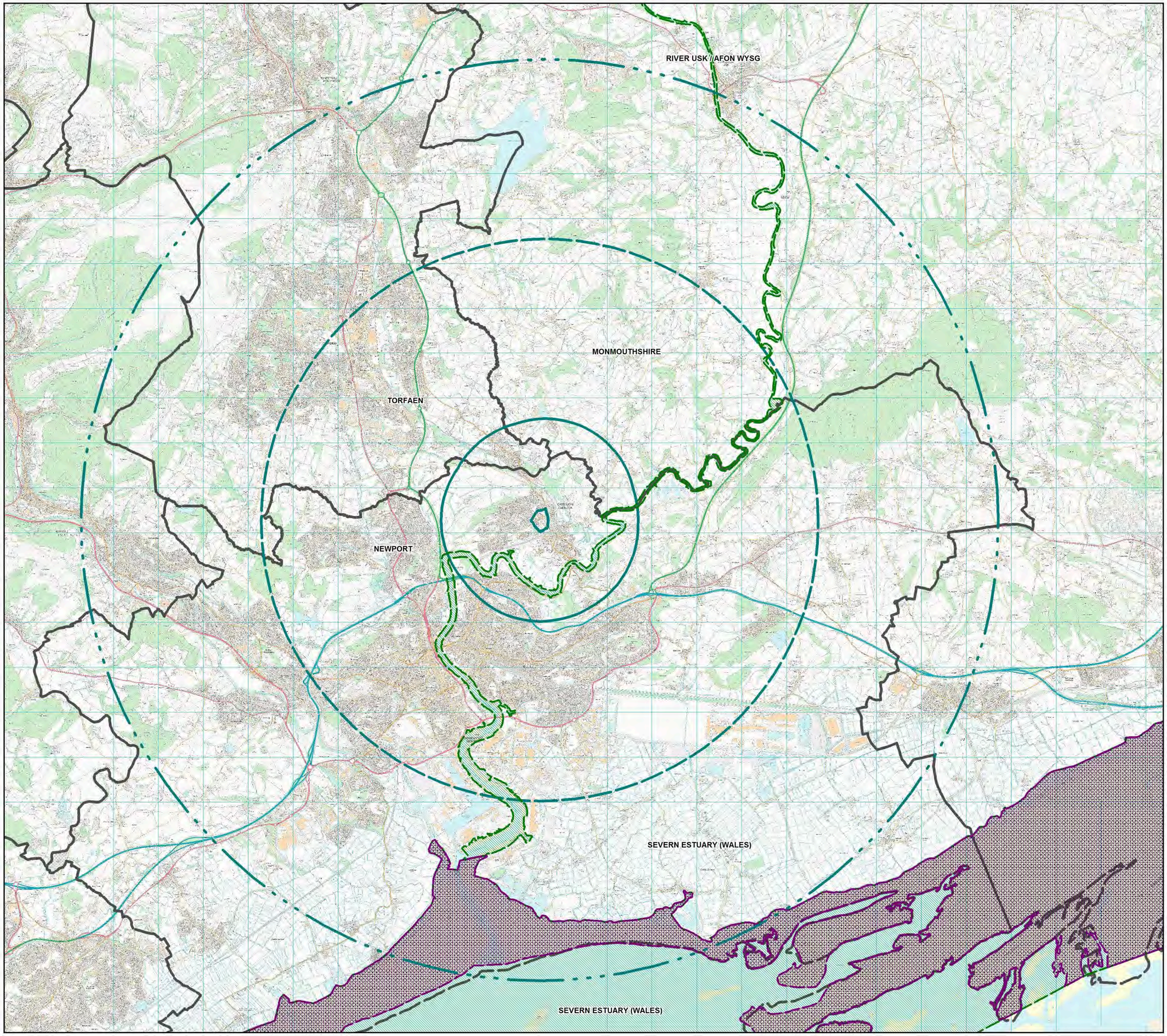
Appendix EDP 3
International Statutory Designated Sites



BIODIVERSITY INFORMATION SEARCH (SPECIES AND DESIGNATED SITES):

CAERLEON UNIVERSITY CAMPUS ST3348891284

- Search Area (plus 2km Search Buffer)
- 6km Search Buffer
- 10km Search Buffer
- Ramsar Site
- Special Protection Area
- Special Area of Conservation
- 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

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Appendix EDP 5
Habitat Descriptions

A5.1 The principal habitats within the Application Site together with their dominant/characteristic plant species were identified during the Extended Phase 1 survey. The Extended Phase 1 Habitat survey was undertaken on 9 May 2019 by a suitably experienced surveyor, during which the weather was dry with 100% cloud cover and no wind.

A5.2 The survey technique adopted for the initial habitat assessment was at a level intermediate between a standard Phase 1 survey technique[9], 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.

A5.3 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.

A5.4 Habitats identified during Extended Phase1 Survey are discussed in turn below and should be read in conjunction with **Plan EDP 1** appended to this report.

Limitations

A5.5 This survey was limited to recording plant species present in both vegetative and floristic forms at the time of survey. The lack of a species being recorded from this survey does not conclude absence from the Application Site.

A5.6 The Extended Phase 1 survey area was fully accessible at the time of the site visit and was completed during the optimal survey months of April and September inclusive. The survey was therefore not limited by seasonal or climatic conditions.

Results

Buildings and Hardstanding

A5.7 The Application Site is dominated by buildings of varying age and construction and include former student residences, a sports hall, offices and lecture halls. These buildings are now predominantly empty. Hardstanding associated with roads, public footpaths and car park areas surround the buildings.

A5.8 Buildings and hardstanding are considered to be of **Negligible** importance *per se*, although buildings have potential to support protected species, namely roosting bats and nesting birds.

[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).

(*Ilex aquifolium*), hawthorn (*Crataegus monogynea*) and hazel (*Corylus avellana*) with a ground flora community 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*).

A5.16 A habitat of Principal Importance, semi-natural broadleaved woodland is considered to be of **Local** level importance.

Shrub Planting

A5.17 Areas of shrub planting are present throughout the Application Site and particularly in amongst the buildings and alongside public footpaths as well as delineating the western boundary of the Application 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/or are encroaching within such habitats. Such species include bramble, apple (*Prunus sp*), and pendulous sedge (*Carex pendula*).

A5.18 Small sections of non-native hedgerows delineate the fenced boundaries of the Application Site and comprise single species, either privet or laurel circa 3m high and 2.5m wide.

A5.19 Given dominance by non-native species with several areas that are largely isolated from one another, shrub planting is considered to be of **Negligible** importance.

Scattered Trees

A5.20 Also associated with areas of shrub planting are scattered mature and semi-mature trees, again comprising a mix of non-native, ornamental and native species. Species include foxglove tree (*Paulownia tomentosa*), black mulberry (Morus *nigra*), black walnut (*Juglans nigra*), copper beech (*Fagus sylvatica f. purpurea*), cut-leaved beech (*Fagus sylavatica 'Laciniata'*), giant redwood (*Sequoiadendron giganteum*), silver birch (*Betulus pendula*), beech (*Fagus sylvatica*), sweet gum tree (*Liquidambar styraciflua*) and small-leaved lime (*Tilia cordata*). Many of these specimens carry a Tree Preservation Order.

A5.21 Non-native and native tree standards are also present within the north-east corner of the Application Site in association with poor semi-improved grassland and dense scrub comprising bramble, hawthorn (*Crataegus monogynea*), holly (*Ilex aquilifolium*) and blackthorn (*Prunus spinosa*). A linear strip of trees is also present along the southern boundary of the Application Site and include silver birch, oak (*Quercus sp.*), holly, privet (*Ligustrum sp.*), semi-mature ash (Fraxinus excelsior), elder (*Sambruca nigra*) and sweet chestnut (*Castanea sativa*).

A5.22 Smaller, shrubby trees approximately 4m high have additionally been planting within hardstanding and car parking areas and typically include such specimens as wild cherry (*Prunus avium*) and hornbeam (*Carpinus betulas*).

Appendix EDP 6
Bat Survey Results

Methodology

A6.1 The update Extended Phase 1 Habitat survey confirmed the continued presence of several trees with potential to support roosting bats within the Application Site, in addition to 16 buildings. Areas of woodland, the hedgerow network, and grassland habitats present across the Application Site are also considered to provide suitable foraging and commuting habitat for bats.

A6.2 The following surveys for bats were therefore undertaken, with reference to national best practice guidelines[10]:

1) Bat Roosting:

   a) Ground level visual assessment of all mature trees for bat roosting potential on 9 May 2019. A ground level visual assessment of onsite trees for bat roosting potential, completed during May 2019. All trees with moderate to high potential for roosting bats, to be impacted by development were then subject to a further detailed aerial inspection on two occasions during September 2019;

   b) Internal visual inspections of onsite buildings associated with Caerleon University Campus for their potential to support roosting bats on 2, 17, 20, 23 and 31 of May 2019; and

   c) Dusk emergence and dawn re-entry surveys of buildings with roosting potential, undertaken between June and August 2019.

2) Bat foraging/commuting activity:

   a) Manual transect surveys conducted on 24 April, 20 May, 26 June and 25 July 2019; and

   b) Automated detector surveys conducted in April, May, June, July and August 2019.

Investigations of Bat Roosting – Trees

A6.3 To determine the potential impacts of the proposed development on bats potentially roosting within trees across the Application Site, all suitable trees were subject to a visual assessment with reference to current best practice guidance[11].

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

- **Moderate potential** – Tree supports one or more features that could be used by bats but are unlikely to support a roost type of high conservation status;

- **Low potential** – Tree supports one or more features that could be used by individual bats opportunistically, or is of sufficient size and age to contain such features; and

- **Negligible potential** – Negligible features likely to support roosting bats.

Investigations of Bat Roosting – Detailed Aerial Tree Inspections

A6.8 Following the initial ground level visual assessment, detailed aerial inspections were undertaken of all trees (**T61**, **T97**, **T100**, **T105**) which were identified as having high or moderate potential to support roosting bats and are going to be felled as a result of the proposed development.

A6.9 The aerial tree surveys were undertaken by a suitably qualified Natural Resources Wales (NRW) bat licensed ecologist. The aerial survey was carried out using recognised arboricultural tree climbing techniques with the use of a rope, harness and ladder to allow inspection of bat roost potential features. To inspect hollows and cavities a 'Ridgid seesnake' endoscope with a 15mm and 5mm diameter head with a 6ft extension was used. This allows a full inspection of most features in which a bat may roost. A digital camera was used to capture photos of the features. Aerial tree surveys were completed on 3 September 2019 and repeated on 17 September 2019.

A6.10 During the aerial survey, details of each potential roosting feature were recorded including the type of feature, location within the tree, height and orientation of feature, notes relating to the feature including any evidence of bats and the potential of each feature to support roosting bats (confirmed roost, high, moderate, low or negligible potential).

Limitations

A6.11 The trees identified needing further areal inspection had good access from the ground which enabled a full inspection of all the potential roosting features (PRFs) identified. Therefore, the surveys are not deemed constraint.

Investigations of Bat Roosting – Buildings

Visual Assessment

A6.12 Where access was permitted, an internal and external visual inspection of all buildings associated with Caerleon University Campus for any evidence of, or potential to support roosting bats, was undertaken by two NRW bat licenced ecologists in accordance with best practice guidelines. The visual assessment was undertaken on 2, 17, 20 and 23 May 2019.

A6.13 The exterior walls and roofs of the buildings were viewed from ground level. Features such as cracks/holes in the stone/brick/wood work, gaps under roof or ridge tiles, loose/lifted lead flashing or roofing felt, cavity walls with potential access points, gaps between lintels above

A6.18 Bats are mobile animals and will move between a series of different roost sites, frequently establishing and occupying new roost sites depending on seasonal requirements and resources available locally. This survey, therefore, only provides a snapshot of the conditions present at the Application Site at the time of survey.

A6.19 There was no internal access to the roof void of building**, B1**-**B4**, **B8** and **B9**. It was only possible to access some of the loft spaces in building **B8**. As such suitable roosting features and evidence of bats may have been missed. All buildings were, however, subjected to further dusk emergence/dawn re-entry surveys such that the presence/inferred absence of roosting bats would be determined and further supported by existing desk study data and survey effort.

Dusk Emergence/Dawn Re-entry Surveys

A6.20 Two dusk emergence and one dawn re-entry survey of buildings previouslt confirmed as supporting a bat roost (**B1**/**B2**, **B3**/**B4**, and **B16**) were undertaken by EDP between June and August 2019. One dusk emergence and one dawn re-entry survey of building **B8** assessed as being of moderate potential for roosting bats was undertaken in June and July 2019. One dusk emergence survey of buildings (**B5**, **B6**, **B7**, **B10**, **B11**, **B12**, **B13**, **B14** and **B15**) assessed as being of low potential for roosting bats were undertaken in June and July 2019.

A6.21 The surveys were undertaken by suitably experienced surveyors, including NRW bat licensed ecologists, to provide adequate coverage of all elevations of the buildings and suitable roosting features/access points previously identified during the roost assessment (refer to **Plan EDP 3** for surveyor locations). Detailed field notes and recordings were made to allow for *in-situ* and *ex-situ* identification and analyses. The surveyors used Elekon Batlogger M bat detectors.

A6.22 Each dusk emergence survey commenced approximately 15 minutes before sunset and continued for 1.5 hours after sunset. Each dawn re-entry survey commenced approximately 1.5 hours before sunrise and continued until 15 minutes after sunrise. A summary of the survey including date, timings and weather conditions is included within **Table EDP A6.2**.

Table EDP A6.2: Summary of Dusk Emergence Surveys at UWS Caerleon.

Date	Start/ Finish Time	Sunset/ Sunrise Time	Time Recorded	Temp (C°)	Cloud (%)	Rain	Wind (Beaufort Scale)	Buildings Surveyed
24.06.19	21:19 - 23:04	21:34	Start	20	50	Nil	2	**B3/B4, B8**
			End	19	100	Light drizzle	2	
25.06.19	21:19 - 23:04	21:34	Start	20	100	Nil	1	**B1/B2, B16**
			End	19	100	Nil	2	
01.07.19	21:18 - 23:03	21:33	Start	19	20	Nil	2	**B5-7, B9-15**
			End	15	20	Nil	3	

Survey date	Dusk/ dawn	Survey time	Sunrise/ sunset time	Weather conditions			
				Temp (ºC)	Cloud (%)	Rain	Wind (Beaufort scale)
25.07.2019	Dawn	03:24-05:24	05:24	18.0	0-10	None	2

A6.25 Manual transect surveys were completed by experienced bat surveyors across one transect survey route designed to provide a representative cover of potential foraging or commuting habitats onsite; namely individual trees, adjacent habitat and non-native hedgerow boundaries. The transect route also continued between several buildings and recorded bat activity near them. Each transect route was walked at a slow and steady pace. All bats were recorded, and their behaviour marked on survey maps in order to characterise the value of the Application Site and its component habitats to foraging and commuting bats. **Plans EDP 7a-7d** illustrate the transect route walked during the surveys.

A6.26 Activity surveys were conducted using Batlogger bat detectors, with observations of the time, location, and activity of all bats seen or heard recorded. Bats were identified on the basis of their characteristic echolocation calls, which were recorded where appropriate and analysed using computer sonogram analysis (AnalookW 3.9f and Batsound 4.03) to confirm species identification. Species of Myotid bat (*Myotis sp.*) and long-eared bat (*Plecotus sp.*) are difficult to tell apart solely from their echolocation calls and were therefore grouped as such.

Automated Detector Surveys

A6.27 To supplement the bat transect survey data and to provide a more robust assessment of activity by horseshoe bat species (which are often under-recorded by transect surveys), bat activity within the Application Site was also sampled using static bat detectors which automatically trigger and record bat echolocation calls. Anabat Express detectors (hereafter referred to as 'Anabats') were deployed at two locations within the Application Site, as shown on **Plan EDP 6**.

A6.28 Anabats were deployed in the illustrated locations for five consecutive nights on four occasions - once during April 2019, once during May 2019, once during June 2019 and once during July. Following failure of an anabat during July 2019, bat detectors were redeployed onsite during August 2019. On each occasion, the Anabats were fixed securely in their location, with an external microphone attached 1.0-2.0m above ground and directed away from the tree/branch to maximise detection sensitivity. Minimum night time air temperatures were recorded by a nearby local weather station. **Table EDP A6.4** gives the sampling dates and microphone details for the Anabats deployed during the three sampling periods.

Table EDP A6.4: Anabat sampling dates and microphone details.

Sampling Period	Location Number	Microphone		Min temp (ºC)
		Height (m)	Direction	
24 -28 April 2019	1	2.0m	south-west	7.0
	2	2.0m	south-west	7.0

the detectors has failed, another deployment was undertaken immediately in August to compensate for the loss of this data.

Results

Desk Study

A6.34 During the updated desk study completed in May 2019, SEWBReC returned 155 records of bats (not including Annex II bats) the most pertinent of which include a brown long-eared bat (*Plecotus auritus*) roost 300m south-west of the Application Site, a common pipistrelle (*Pipistellus pipistrellus*) and brown long-eared bat roost 1.8km north-east and a soprano pipistrelle (*Pipistrellus pygaemus*) bat maternity roost 510m south-east of the Application Site. In addition to other low status roosts for these species, records of common pipistrelle, soprano pipistrelle, brown long-eared, *Myotis sp*. and noctule (*Nyctalus noctula*) bats were recorded within 2km of the Application Site more generally.

A6.35 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-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.

A6.36 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 was identified. The rest of the trees across the Application Site were deemed to have negligible potential to support roosting bats as they lacked any features.

A6.37 A visual assessment of onsite 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 (**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.

A6.38 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 'hotpsots' of activity around groups of buildings. During the survey, no bats were recorded emerging from or entering the buildings on site. However, there were records of very early bat activity close to sunset by Felthorpe House (**B16**) in the south-east corner of the Application Site, indicating presence of a roost in close proximity.

Tree ID	Species	Description (including BS5837:2012 Tree Survey Categorisation and key features)	Bat Roost Potential May 2019
T16	Ornamental flowering cherry	Cat B. Splits in tree trunk observed.	Moderate
T48	Sessile oak	Cat B. Splits and flaking bark observed.	Moderate
T53	Deodar cedar	Cat A. One limb broken off with the potential to provide area for individually roosting bats.	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 was noted as potential roosting features.	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
T97	Apple tree	Cat U. The base of the tree is rotten with three rotten areas observed below 1m height.	Moderate
T94	Lawson cypress	Cat B. The cypress is covered in ivy, which could potentially offer some limited bat roosting potential.	Low
T100	Foxglove tree	Cat A. Tree with clear high roosting bat potential. One woodpecker hole observed as well as two limb holes. The tree is partly covered with ivy.	High
T105	Horse chestnut tree	Cat U. One rot hole observed at the base as well as flaking bark along the main limb reaching into the crown area.	Moderate

Investigations of Bat Roosting – Detailed Aerial Tree Surveys

A6.43 Following further detailed aerial inspections of trees during September 2019 with moderate-high potential for roosting bats, no bats or evidence of bats were seen during the visual inspections. Tree **T105** was, however, confirmed to be of moderate potential to support roosting bats whilst **T97** was downgraded to low potential and **T61** to negligible potential. **T100** previously assessed as high potential to support roosting bats was downgraded to moderate potential to support roosting bats.

A6.44 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

Table EDP A6.7: Preliminary Building Inspection Results, May 2019.

Building ID	Description and Photo	Evidence of Bats/Potential Roost Features	Bat Roost Potential
B1/B2: Dolaucothi/ Camelot Student Block	Three storey student accommodation. Two identical L-shaped compartments form the complete structure. The external walls are made of red brick with cavity walls. The roof is corrugated metal and lined with bitumen felt. The soffit boxes are made of timber.	The roof is generally in good condition with intact bitumen felt cover. The soffit boxes have some ventilation shafts missing which provide internal access. Rooks were observed nesting in some of them. Light ingress was visible within the loft void coming through the gap created for the wiring of the external flood light. No signs of bats.	Confirmed bat roost in 2016 by Ecosulis. No evidence of roosting bats identified during internal inspection in 2019.
B3/B4: Blaenavon/ Abergavenny Student Block	The buildings are almost identical to **B1/B2**. The materials are the same as listed above.	As with **B1/B2** buildings, **B3/B4** also have missing ventilation shafts as well as gaps observable through the external walls around flood lights. No signs of bats. No nesting birds.	Moderate summer roosting and negligible hibernation potential. No change in ecological baseline.
B5: Nursery (Security) Building	External walls are made of un-rendered brick with natural slate roof tiles and clay ridge tiles.	Some roof tiles are slightly raised, providing access opportunities internally. The loft void is well insulated with a type of paper lining and rock wool laid on the floor of the ceiling. There appears to be no potential access directly into the loft void apart from the space between the roof lining and roof tiles. No signs of bats. No nesting birds.	Low summer roosting and negligible hibernation potential. No change in ecological baseline.

Building ID	Description and Photo	Evidence of Bats/Potential Roost Features	Bat Roost Potential
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. 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. The internal loft voids are in some places insulated with celotex, whereas other areas have timber cladding with no roof lining. No signs of bats. No nesting birds.	Moderate summer roosting and low hibernation potential. No change in ecological baseline.
B9: Toilet Block	 The building walls are made of brick with no render covering them. The roof is made of natural slate tiles.	Natural slate tiles are raised in several places providing internal access, especially along the roof edges above the gable ends. Timber barge and fascia boards are well fitted; however, the north-western gable end is covered with light ivy. There is no access into the loft void from inside the building. No signs of bats. No nesting birds.	Low summer roosting and negligible hibernation potential. Change in ecological baseline. Assessed as negligible potential during 2015/2016.

Building ID	Description and Photo	Evidence of Bats/Potential Roost Features	Bat Roost Potential
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. 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. No signs of bats. No nesting birds.	Low summer roosting and negligible hibernation potential of 4 student blocks. 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. No signs of bats. No nesting birds.	Confirmed bat roost in 2016 by Ecosulis. No evidence of roosting bats identified during internal inspection in 2019.

A6.46 The above results are largely comparable to the results of visual buildings inspections undertaken by Ecosulis in 2015 and 2016. An update assessment, however, considered buildings **B12-B15** to have low potential to support roosting bats following identification of suitable roosting features.

Dusk Emergence/Dawn Re-entry Survey

A6.47 Dusk emergence and/or dawn re-entry surveys of buildings **B1**/**B2**, **B3**/**B4** and **B5B15** with bat roost potential have been undertaken by EDP between June and August 2019.

A6.48 During a dusk emergence survey of building **B3** on 24 June 2019, three

Site during the course of the activity surveys. During the automated detector surveys, the vast majority of this behaviour (average 76% of Anabat recordings) related to common pipistrelle bat. Noctule, soprano pipistrelle and myotid bats were occasionally recorded, comprising 24% of all Anabat calls recorded during April, May, June, July and August. Long eared sp. and Nyctalus/Eptesicus sp. have only been recorded during June accounting for less than 1% of all anabat recordings. The range and proportion of species/species groups recorded during the manual transect surveys was broadly similar to that described above with regards to the automated surveys. A minimum of four species were recorded during the manual transect surveys. Overall relatively low levels of bat activity were recorded, predominantly along the northern and eastern boundaries of the Application Site, the latter being contiguous with broadleaved woodland and unmanaged grassland. Foraging activity was also recorded in association with the southern boundary and former playing field. Activity is dominated by common pipistrelle with occasional registrations from soprano pipistrelle. Registrations of Myotis and noctule was also recorded within the south of the Application Site in May 2019.

Evaluation

A6.57 An evaluation of the bat assemblage at the Application Site is provided below, with reference to the relative abundance and distribution of each bat species (with reference to the most up-to-date information on local and national species distribution[14,15] and population trends[16] available at the time of writing).

A6.58 Common pipistrelle bats are common and widespread across the UK, representing the most and second most abundant species in the UK respectively. Whilst having suffered significant historic declines, national population monitoring[17] indicates that common pipistrelle bats are stable nationally and increasing. Common pipistrelle bat was found to be the dominant species utilising the Application Site during the activity surveys and was predominantly associated with the north eastern, eastern and southern edges of the Application Site. Individual bats were also seen commuting and foraging between campus buildings with random distribution. There was decrease in activity above the open parking space in the south-western corner of the Application Site. With respect to roosting individuals, it is considered that buildings **B1**/**B2**, **B3**/**B4** and **B16** each support a summer day roost for low numbers of common pipistrelle bats. Common pipistrelle bats using the Application Site are, therefore, considered to be of local importance.

A6.59 Myotid bat species occur throughout most of the UK, their populations considered to be either stable or increasing in most cases[18]. 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

[14] 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
[15] http://monmouthshirebatgroup.org/Bats-in-Monmouthshire.php
[16] Bat Conservation Trust, 2018. The National Bat Monitoring Programme. Annual Report 2017
[17] Bat Conservation Trust, 2018. The National Bat Monitoring Programme. Annual Report 2017
[18] Bat Conservation Trust, 2018. The National Bat Monitoring Programme. Annual Report 2017

Table EDP A6.8: Total Bat Passes per Transect per Month.

	April		May		June		July	
	T1	**T2**	**T1**	**T2**	**T1**	**T2**	**T1**	**T2**
Common pipistrelle	9	9	10	12	11	16	38	55
Myotis sp.	0	0	0	2	0	0	0	0
Noctule	0	0	0	1	0	0	0	0
Soprano pipistrelle	2	0	1	2	0	1	3	2
Total	**11**	**9**	**11**	**17**	**11**	**17**	**41**	**57**

Table EDP A6.9: Total Bat Passes from joined transects per Month.

	April	May	June	July
Common pipistrelle	18	22	27	93
Myotis sp.	0	2	0	0
Noctule	0	1	0	0
Soprano pipistrelle	2	3	1	5
Total	**20**	**28**	**28**	**98**

Table EDP A6.10: Automated Detector Survey Results April 2019. (*Less than 1%).

Position	Bat Species	Number of Bat Passes Recorded per Night					Total	% of Total
		24 April	**25 April**	**26 April**	**27 April**	**28 May**		
1	Common pipistrelle	5	15	0	0	7	27	87
	Soprano pipistrelle	2	0	0	0	2	4	13
	Total	**7**	**15**	**0**	**0**	**9**	**31**	**100**
2	Common pipistrelle	10	7	0	8	14	39	85
	Myotis sp.	1	0	0	0	0	1	2
	Soprano pipistrelle	2	1	0	3	0	6	13
	Total	**13**	**8**	**0**	**11**	**14**	**46**	**100**

Table EDP A6.13: Automated Detector Survey Results July 2019. (*Less than 1%).

Position	Bat Species	Number of Bat Passes Recorded per Night					Total	% of Total
		25 July	26 July	27 July	28 July	29 July		
1	Common pipistrelle	10	9	7	12	13	51	67
	Noctule	9	2	2	2	5	20	26
	Myotis sp.	0	1	1	0	0	2	3
	Soprano pipistrelle	0	0	0	1	0	1	1
	Pipistrelle sp.	0	1	0	1	0	2	3
	Total	**19**	**13**	10	16	18	**76**	**100**
2	Common pipistrelle	163	109	Detector Failed.			272	91
	Myotis sp.	1	4				5	2
	Noctule	8	3				11	4
	Soprano pipistrelle	8	2				10	3
	Total	**180**	**118**	N/A	N/A	N/A	**298**	**100**

Table EDP A6.14: Automated Detector Survey Results August 2019. (*Less than 1%).

Position	Bat Species	Number of Bat Passes Recorded per Night					Total	% of Total
		1 August	2 August	3 August	4 August	5 August		
1	Common pipistrelle	19	22	41	16	24	122	47
	Noctule	1	1	1	0	0	3	1
	Myotis sp.	0	2	1	3	0	6	2
	Soprano pipistrelle	2	23	16	52	38	131	50
	Total	**22**	**48**	**59**	**71**	**62**	**262**	**100**
2	Common pipistrelle	146	13	12	17	21	209	64
	Myotis sp.	1	0	0	1	0	2	1
	Noctule	40	4	39	8	0	91	28
	Soprano pipistrelle	18	2	3	0	0	23	7
	Total	**205**	**19**	**54**	**26**	**21**	**325**	**100**

Appendix EDP 7
Habitat Suitability Index Results

Table EDP A7.1: Pond Habitat Suitability Assessment of onsite waterbodies.

Suitability Index	Criteria	Definition	Possible Score	P1
SI_1	Geographic Location	Zone A - optimal	1	0.5
		Zone B - marginal	0.5	
		Zone C - unsuitable	0.01	
SI_2	Pond Area	Pond surface area to the nearest 50m^2	*	0.05
SI_3	Permanence	Never Dries	0.9	0.9
		Rarely dries (Dries no more than 2/10 years or in drought only)	1	
		Sometimes dries (Dries between 3/10 years to most years)	0.5	
		Dries annually	0.1	
SI_4	Water Quality	Good (abundant & diverse invertebrate community)	1	0.33
		Moderate (moderate invertebrate community)	0.67	
		Poor (low invertebrate diversity, few submerged plants)	0.33	
		Bad (clearly polluted, pollutant tolerant invertebrates present, no submerged plants)	0.01	
SI_5	Shade	% shade of pond perimeter to at least 1m from the shore	*	0.6
SI_6	Waterfowl	Absent (no evidence of waterfowl, excluding moorhen)	1	1.0
		Minor (waterfowl present, though little impact)	0.67	
		Major (severe impact of waterfowl)	0.01	
SI_7	Fish	Absent (no records of fish stocking and no fish seen during survey)	1	1.0
		Possible (no evidence of fish, but conditions suggest presence)	0.67	
		Minor (small numbers of crucian carp, goldfish or stickleback)	0.33	
		Major (dense populations of fish present)	0.01	
SI_8	Pond Count	No. ponds within 1 km of survey pond not separated by major barriers and divided by 3.14	*	0.1
SI_9	Terrestrial	Good (extensive habitat offering good opportunities for foraging and shelter surrounding pond)	1	0.67
		Moderate (habitat offering opportunities for foraging and shelter, but not extensive and does not completely surround pond)	0.67	
		Poor (habitat with poor structure, offering limited opportunities for foraging and shelter)	0.33	
		None (No suitable habitat around pond)	0.01	
SI_{10}	Macrophytes	% pond surface area occupied by macrophyte cover (excluding duckweed) and submerged plants reaching the surface	*	0.85
HSI Score = $(SI_1*SI_2*SI_3*SI_4*SI_5*SI_6*SI_7*SI_8*SI_9*SI_{10})^{1/10}$				**0.44**
Pond Suitability (<0.5 = poor; 0.5-0.59 = below average; 0.6-0.69 = average; 0.7-0.79 = good; >0.8 = excellent)				**Poor**

Appendix EDP 8
Reptile Survey Results

Methodology

A8.1 Overall the Application Site is considered to of low value to reptiles, 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.

A8.2 Therefore, to confirm the presence or likely absence of reptiles and the extent of their usage of the Application Site, detailed refugia-based reptile surveys were undertaken. With reference to best practice guidance[21][22], seven survey visits were undertaken in May 2019.

A8.3 A total of 105 artificial refugia, comprising bitumen undertile felt cut to approximately 1m x 0.5m, were deployed within suitable reptile habitat across the Application Site on 24 April 2019. The approximate location and number of reptile refugia is illustrated on **Plan EDP 8**.

A8.4 Reptile refugia were left undisturbed *in situ* for a minimum period of 10 days prior to the commencement of reptile surveys. Detailed weather conditions recorded during each survey visit undertaken are summarised in **Table EDP A8.1**.

Table EDP A8.1: Date, timing and weather conditions of reptile surveys undertaken during May 2019.

Visit No.	Date	Start-Finish Time	Air Temp (°C)	Wind Speed (Beaufort)	Cloud Cover (%)	Rain
1	07.05.2019	10:30–11:50	13.1-14.6	1-2	9	None
2	10.05.2019	13:45–15:00	18.0-24.0	1-5	10-9	None
3	13.05.2019	11:10–12:30	12.0	1-5	10-2	None
4	17.05.2019	14:00-15:10	10.0–12.0	0-4	100	None
5	24.05.2019	13:30-14:40	18.0	1-4	90-100	None
6	28.05.2019	15:20-16:45	16.0	1-4	30-90	None
7	31.05.2019	10:45-11:50	14.0-16.0	1-2	65-75	Light drizzle

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

[22] DMRB (2005) *Nature conservation advice in relation to reptiles and roads. Volume 10, Section 4, Part 7, HA/116/05.* DMRB

Table EDP 8.3: Number, and peak survey count, of slow worm recorded within the Application Site.

Visit	Visit Date	Slow worm	
		Adult	Juvenile
1	07.05.2019	0	0
2	10.05.2019	0	0
3	13.05.2019	0	0
4	17.05.2019	1	0
5	24.05.2019	0	0
6	28.05.2019	1	0
7	31.05.2019	0	1
Peak Survey Count:		**1**	
Population Size Class Estimate:		**Low**	

A8.10 One adult male, one adult female and one juvenile slow-worm were identified during survey visits 4, 6 and 7 respectively. The male slow-worm was found along the north-eastern edge of the Application Site, while the female and the juvenile slow worm were identified adjacent to one of the student accommodation blocks along eastern edge of the Application Site. Both habitats are represented by predominantly unmanaged and tussocky poor semi-improved grassland and are contiguous with broadleaved woodland. Based on the maximum count of one individual during a single survey, the slow-worm population utilising the Application Site is confirmed as small.

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)
Plan EDP 4	Bat Emergence/Re-Entry Survey Results on Buildings B1/2 and B3/4 (edp5601_d023 17 October 2019 GY/LL)
Plan EDP 5	Bat Emergence/Re-Entry Survey Results on Building B16 (edp5601_d024 17 October 2019 GY/LL)
Plan EDP 6	Automated Bat Detector Locations and Transect Route (edp5601_d004 17 October 2019 GY/EM)
Plan EDP 7a	April Bat Transect Survey Results 2019 (edp5601_d006a 17 October 2019 LB/EM)
Plan EDP 7b	May Bat Transect Survey Results 2019 (edp5601_d007a 17 October 2019 LB/EM)
Plan EDP 7c	June Bat Transect Survey Results 2019 (edp5601_d018a 17 October 2019 GY/LL)
Plan EDP 7d	July Bat Transect Survey Results 2019 (edp5601_d022 17 October 2019 AG/LL)
Plan EDP 8	Reptile Survey Results (edp5601_d019a 17 July 2019 JTF/LL)

Site Boundary

Broadleaved Semi-natural Woodland

SI Poor Semi-improved Grassland

A Amenity Grassland

Dense Continuous Scrub

Ephemeral/Short Perennial

Shrub Planting

Former Allotment

Buildings

Hardstanding

Intact Species-poor Hedgerow

Fence

Wall

Scattered Trees (Broad-leaved)

Scattered Scrub

client

Redrow Homes (South Wales) Ltd

project title

USW Caerleon

drawing title

Plan EDP 1: Update Habitat Survey, June 2019

date	17 JULY 2019	drawn by	GY
drawing number	edp5601_d002a	checked	EM
scale	1:2,000 @ A3	QA	JTF

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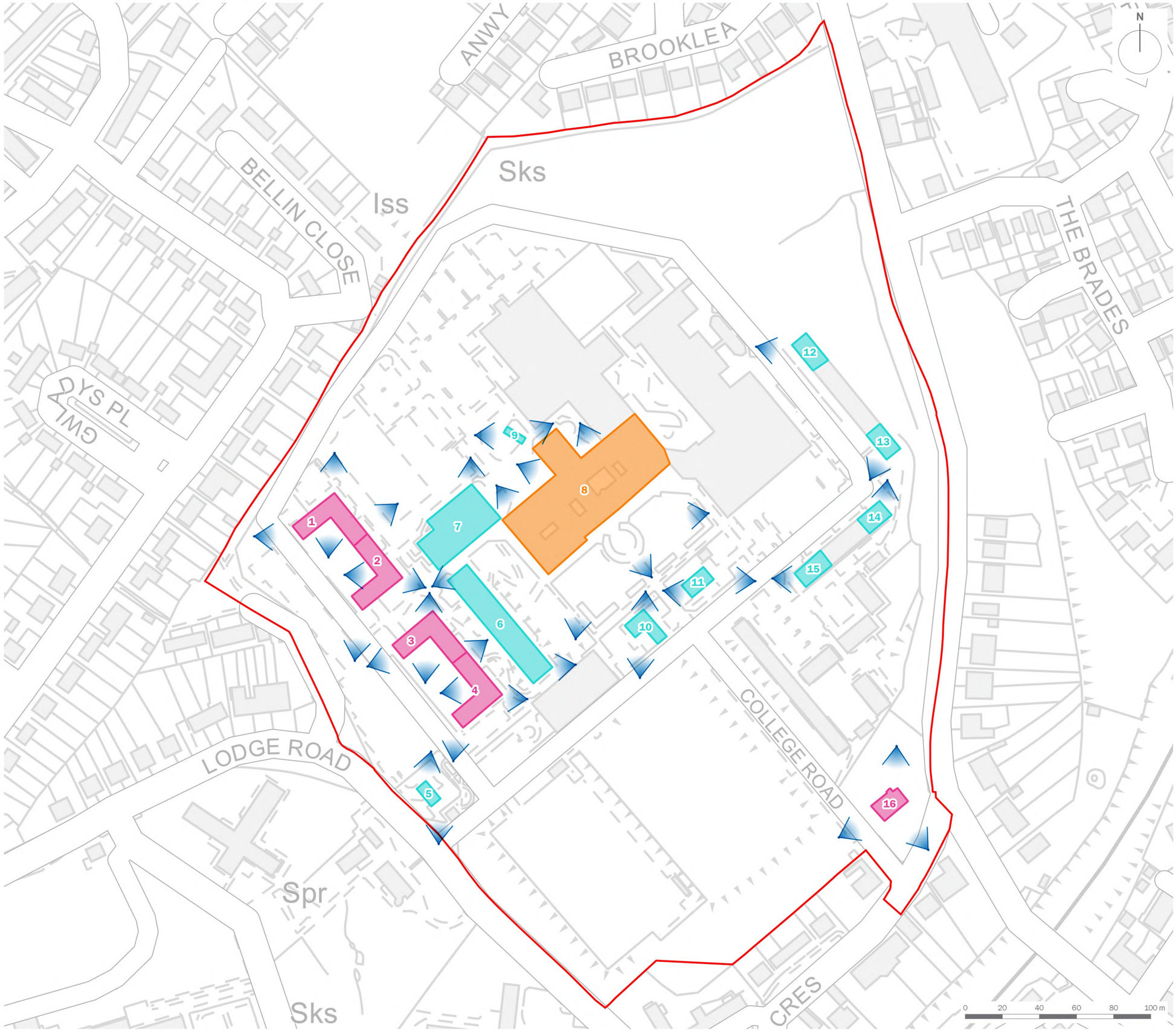

Site Boundary

Bat Emergence/Re-entry Surveys

Confirmed Roosts During 2019

Moderate Roost Potential

Low Roost Potential

Surveyor Positions

client

Redrow Homes (South Wales) Ltd

project title

USW Caerleon

drawing title

Plan EDP 3: Bat Roost Building Inspection and Roost Characterisation Survey Results

date	22 AUGUST 2019	drawn by	LB
drawing number	edp5601_d005b	checked	LL
scale	1:2,000 @ A3	QA	GY

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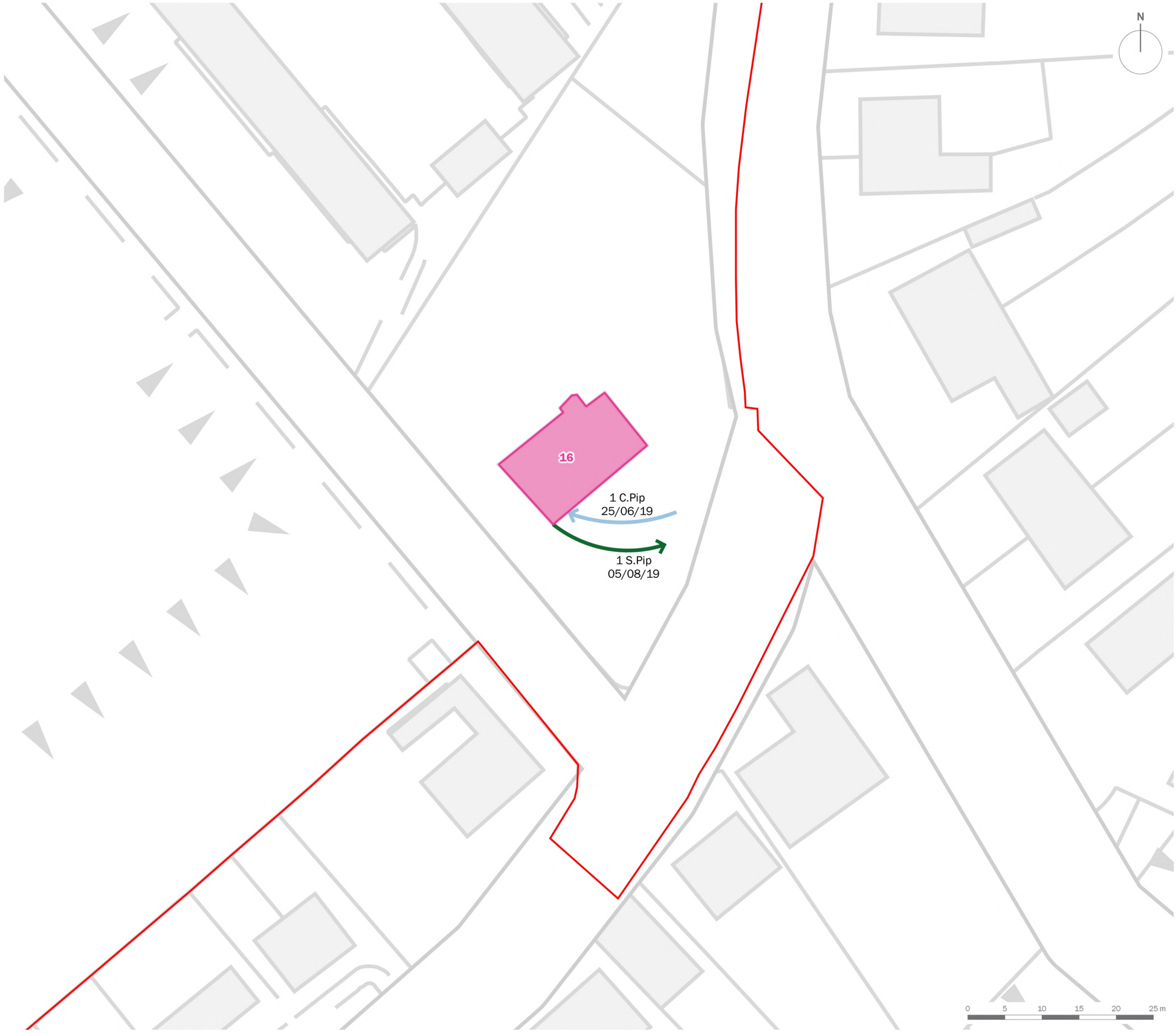

Site Boundary

Bat Emergence/Re-entry Surveys

Confirmed Roosts During 2019

Common Pipistrelle Re-entry

Soprano Pipistrelle Emergence

client

Redrow Homes (South Wales) Ltd

project title

USW Caerleon

drawing title

Plan EDP 5: Bat Emergence/Re-Entry Survey Results on B16

date	**17 OCTOBER 2019**	drawn by	**GY**
drawing number	**edp5601_d024**	checked	**LL**
scale	**1:500 @ A3**	QA	**CR**

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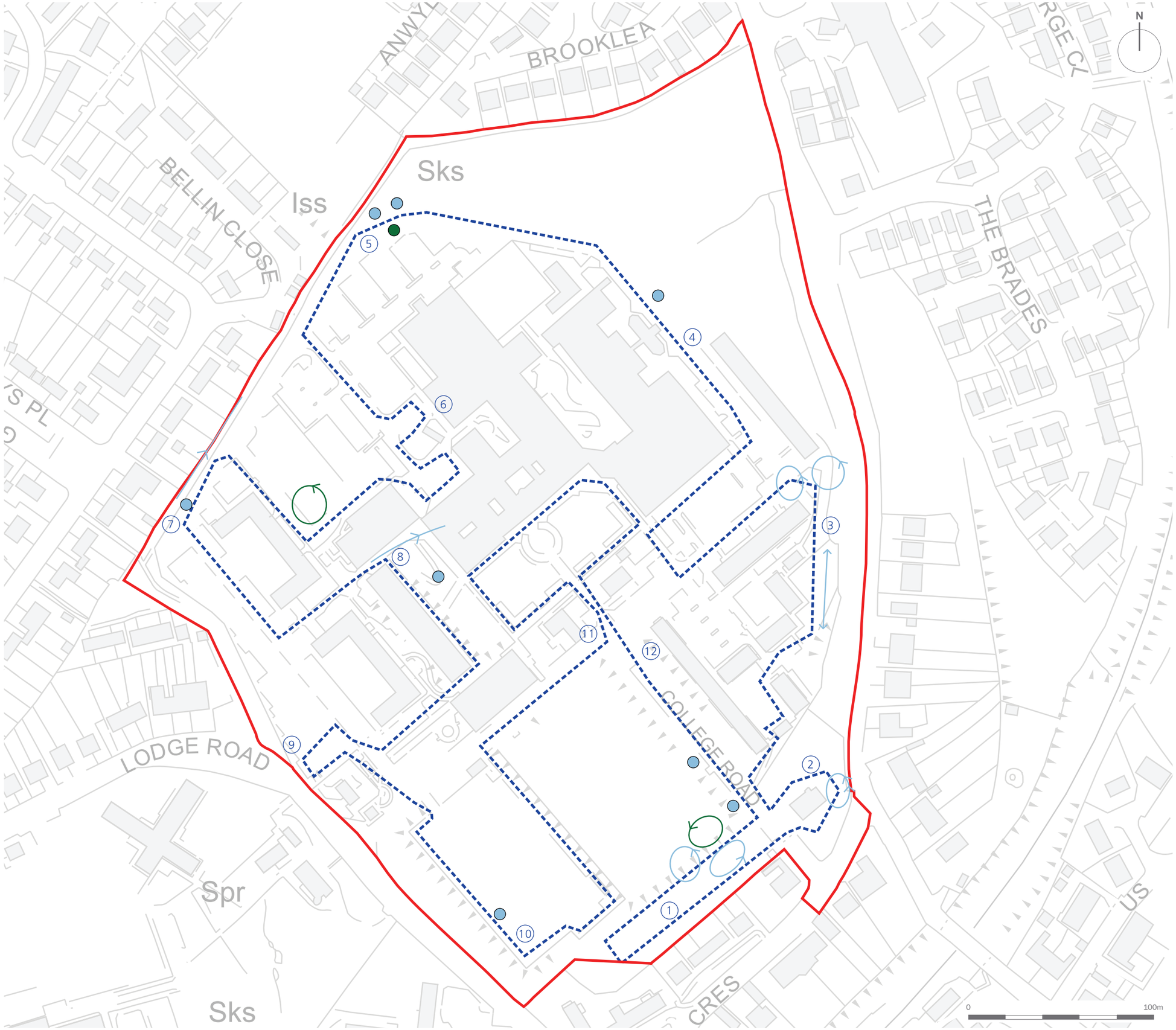

Site Boundary

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

Transect Routes

Transect Route

Listening Points

client
Redrow Homes (South Wales) Ltd

project title
USW Caerleon

drawing title
Plan EDP 7a: April Bat Transect Survey Results 2019

date	**17 OCTOBER 2019**	drawn by	**LB**
drawing number	**edp5601_d006a**	checked	**EM**
scale	**Refer to scale bar**	QA	**GY**

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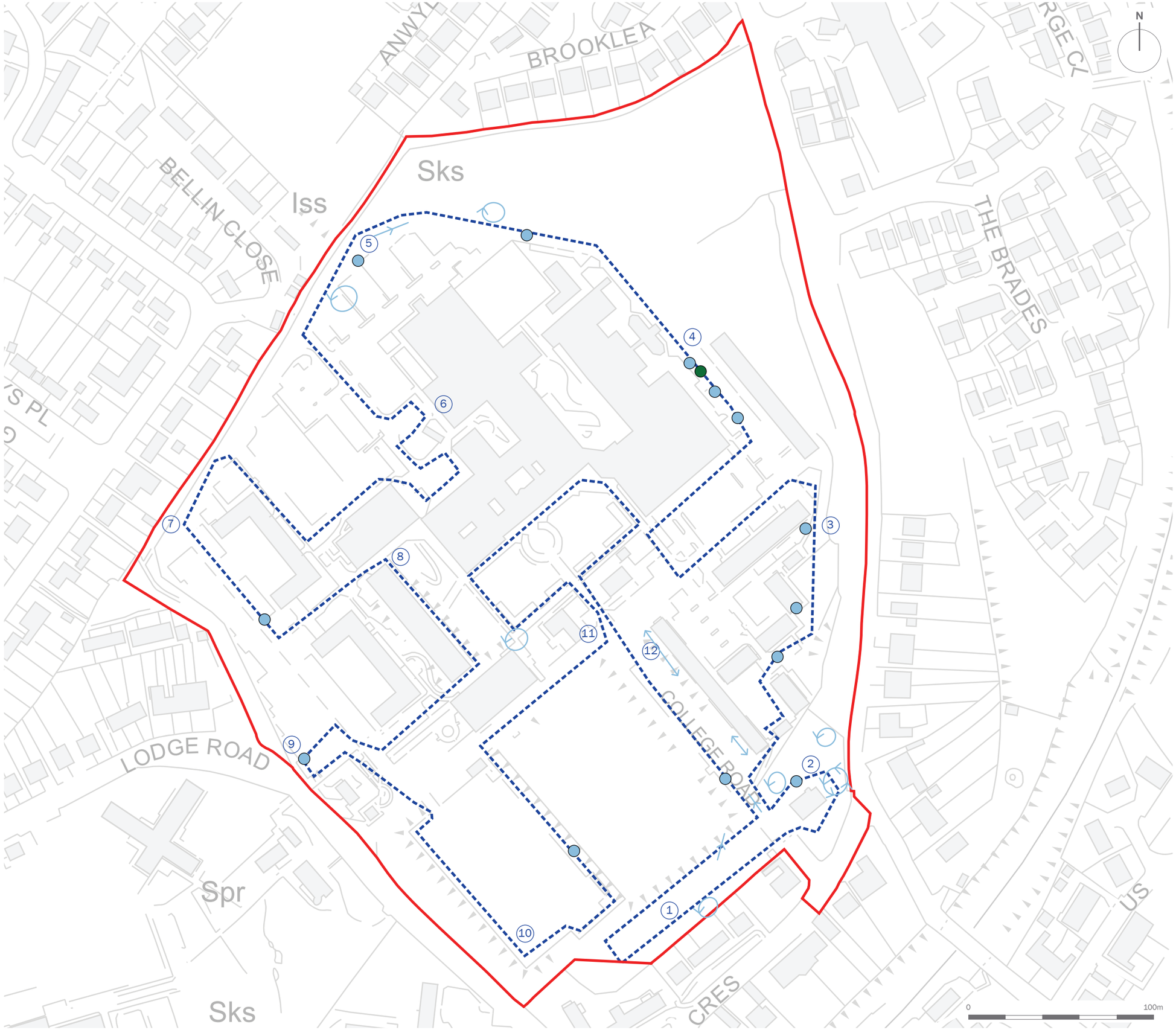

Site Boundary

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

Transect Routes

Transect Route

Listening Points

client
Redrow Homes (South Wales) Ltd

project title
USW Caerleon

drawing title
Plan EDP 7c: June Bat Transect Survey Results 2019

date	**17 OCTOBER 2019**	drawn by	**GY**
drawing number	**edp5601_d018a**	checked	**LL**
scale	**Refer to scale bar**	QA	**JTF**

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Site Boundary

Slow Worm Locations

Broadleaved Semi-natural Woodland

SI Poor Semi-improved Grassland

A Amenity Grassland

Dense Continuous Scrub

Ephemeral/Short Perennial

Shrub Planting

Former Allotment

Buildings

Hardstanding

Intact Species-poor Hedgerow

Fence

Wall

Scattered Trees (Broad-leaved)

Scattered Scrub

client

Redrow Homes (South Wales) Ltd

project title

USW Caerleon

drawing title

Plan EDP 8: Reptile Survey Results

date	**17 JULY 2019**	drawn by	**JTF**
drawing number	**edp5601_d019a**	checked	**LL**
scale	**1:2,000 @ A3**	QA	**GY**

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