Victoria Heights, Chudleigh Road, Alphington, Devon

Update Ecological Impact Assessment

May 2019

A report on behalf of Barratt Homes

Ref: 0032-EcIA-FM

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Central OS Grid Reference	SX 9185 8891
Client	Barratt Homes

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Executive Summary

This report presents the results of an Update Ecological Impact Assessment at Victoria Heights, located off Chudleigh Road, Alphington, Devon (central OS grid reference: SX 9185 8891) in relation to a residential development with associated open space, infrastructure and landscaping.

The Site has outline consent for 175 residential dwellings and detailed consent for the conversion and demolition of some existing buildings, along with 16 dwellings in the north-east corner. To update the previous survey work in 2013, a desk study, Extended Phase 1 Habitat Survey, dormouse surveys and bat surveys (building inspections) were undertaken in 2018 and 2019, to inform the design submitted as part of the Reserved Matters Application, for the outline area.

The Site is approximately six hectares and comprises two sheep-grazed semi-improved grassland fields, a stream and a small plantation woodland. The majority of the Site is bound by metal estate fencing, with two short sections of species-poor hedgerow and broadleaved woodland. The Site was found to have evidence of a range of protected and notable species, including dormice and breeding birds; the stream was also likely to support commuting otter. The stream corridor and woodland edges were found to be of value for commuting and foraging bats. Updated surveys of buildings within the detailed consent boundary found that they support roosting greater and lesser horseshoe bat, long-eared bat and pipistrelle species and habitats within the outline boundary are important as flight lines for these roosts. The Site is within 10km of Exe Estuary SPA/ Ramsar.

Hedgerows and the stream corridor will be retained, although some minor tree removal from the woodland is required to allow for the access road to be constructed. This will constitute some loss of dormouse habitat. The majority of the fields will be lost, with the exception of a wide buffer alongside the stream corridor which is within the flood zone and will form part of public open space. A separate application for the north-east corner (cottages and barns) requires the demolition of several buildings (excluding the threshing barn and cottages) and therefore results in the loss of the bat roosts.

The following mitigation and compensation measures will be undertaken to minimise impacts on important ecological features:

- Financial contributions made in accordance with local policy to offset recreational impacts to Exe Estuary;
- A Construction Environmental Management Plan (CEMP) will be adhered to, which will include measures to control waterborne pollution, protect trees and hedgerows, limit light-spill and protect fauna with specific timing of works, Ecological Clerk of Works and best practice. No earthworks will be undertaken within 10m of the stream unless specific pollution control measures are in place;
- European Protected Species Licences will be obtained for dormice and bats prior to works on Site;
- A detailed drainage strategy will ensure no increase in surface water flow to the Matford Brook and minimise any risk of pollutants entering the watercourse;
- Mature/ veteran trees, woodland and marshy grassland will be retained within POS;
- Compensatory planting for any loss of trees or hedgerow will exceed the amount lost and increase connectivity. Native shrubs will be selected, with a variety of species, including hazel and thorny species to benefit dormice;
- The stream and woodland will be buffered with a minimum of 5m width of species-rich habitat. Landscaping will be used along the stream corridor to protect the banks from uncontrolled access. No lighting will be installed that spills onto the watercourse or bankside vegetation;
- During construction and operation, no lighting is to be directed at bat corridors or roosts;
- A long-term management plan will be followed to maximise biodiversity and maintain corridors for wildlife.

Additional recommendations have been provided in order to enhance the Site for biodiversity post-development. Overall, the development will result in a net gain for biodiversity, provided the mitigation is undertaken in accordance with this report.

The Devon Wildlife Checklist has been provided in **Appendix 1**.

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1 INTRODUCTION

This report has been produced to accompany a Reserved Matters Application at Victoria Heights, located on land adjacent to Chudleigh Road, Alphington, Devon (central OS grid reference: SX 9185 8891). The surveys were commissioned by Barratt Homes. The area within the application boundary is hereafter referred to as the 'Site'.

1.1 Background

The Site is allocated for development under Policy SWE1 of the Teignbridge Local Plan 2013 – 2033 (Adopted May 2014) as part of the South West of Exeter Urban Expansion. It received planning consent from Teignbridge District Council (TDC) on 21 December 2018 for a hybrid application comprising: Full application for conversion of the existing threshing barn and associated linhay to form three dwellings and erection of 16 new dwellings with associated landscaping and access and outline application for 175 dwellings including four gypsy and traveller pitches and public open space (approval sought for access) (application reference: 15/01331/MAJ).

The Reserved Matters Application comprises 168 dwellings with associated infrastructure and landscaping, accessed via Chudleigh Road on the eastern boundary. A separate application covers the conversion of buildings in the north-east corner of the Site and the additional plots in that area.

An Environmental Statement (Business Location Services Ltd, 2015) was submitted with the hybrid application; the ecology chapter included an assessment on the effects of the proposal on ecological features and was based on a Preliminary Ecological Appraisal and Bat Survey Report undertaken in 2013 (Green Ecology, 2013a & b).

1.2 Aims

Condition 6 of the consent requires the development to be carried out in accordance with the Environmental Statement and Appendices (amongst other documents) approved as part of the application. However, given that several years have passed since the previous surveys, an update was considered necessary.

The aims of this report are to:

- Update the previous ecological studies where required and re-evaluate the baseline conditions;
- Assess whether revised mitigation will be required in accordance with the findings of the surveys, taking into consideration the RM site layout, requirements of the ES and any updated planning policy, legislation and other published guidance (**Appendix 1**); and,
- Provide details of avoidance, mitigation, compensation and enhancements.

1.3 Description of Proposed Development

The development comprises 168 dwellings located on approximately six hectares (ha) of land between Chudleigh Road to the east, Waybrook Lane to the north and the A30 dual carriageway to the south-west. Vehicular access will be via two new access roads from Chudleigh Road.

Public Open Space (POS) is proposed within the centre of the Site, either side of an existing watercourse. Mature and veteran trees are being retained and will be surrounded by POS.

The north-eastern part of the Site, which will require demolition of outbuildings, the conversion of the existing barn/ linhay and renovation of the existing cottages (to be developed by others) and the construction of 17 dwellings is subject to a separate application.

2 METHODS

2.1 Ecological Scoping and Baseline Data Collection

Ecological surveys for the Site were reviewed to inform the current assessment. These comprised:

- Preliminary Ecological Appraisal (Green Ecology, 2013a);
- Bat Survey Report (Green Ecology, 2013b); and
- Cirl Bunting Nesting Survey Report (EAD Ecological Consultants, 2014).

In addition, ecology reports to accompany an Environmental Statement for the adjacent Bovis application to the north (15/00708/OUT) were also reviewed. This showed that dormouse *Muscardinus avellanarius* had been found in hedgerows adjacent to the Site's boundary.

Updated surveys, comprising a desk study, Extended Phase 1 Habitat Survey, dormouse survey and assessment of trees and buildings for roosting bats were undertaken with the Site in 2018 and 2019 in accordance with best practice guidance. Details are provided in **Appendices 2 – 6**. Emergence surveys to characterise bat roosts in the detailed application area are also being undertaken and will be reported on separately.

2.2 Baseline Evaluation and Impact Assessment

The evaluation and assessment were undertaken in accordance with the Chartered Institute of Ecology and Environmental Management's Guidelines for Ecological Impact Assessment in the UK and Ireland (CIEEM, 2018). Measures are described to ensure that any impacts can be avoided, minimised or compensated for by applying the mitigation hierarchy in accordance with NPPF paragraph 175 (a) which states:

"If significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused."

2.3 Limitations

Care has been taken to ensure that balanced advice is provided on the information available and collected during the study period (s), and within the resources available for the project. However, the possibility of important ecological features being missed due to survey timings, absence during surveys or the year of survey cannot be ruled out. In addition the lack of evidence or records of protected species on Site does not preclude their presence from Site. There were no specific limitations to the field work.

Access to some floors of the barns was not possible due to structural/ health and safety concerns which meant that a full survey for bats and bat evidence could not be undertaken. Emergence surveys are therefore being undertaken to gather additional information on usage by bats. The threshing barn and cottages were not surveyed due to being under the ownership of another party. Some of the other buildings indicated on the map provided were not present or in a state of severe disrepair and not suitable for roosting bats.

3 BASELINE CONDITIONS & EVALUATION

3.1 Update Survey Results - Habitats

The Site comprises two fields of sheep-grazed semi-improved grassland bound by fences and small sections of hedgerow and woodland. A complex of farm buildings is located in the north-east corner (subject to a separate application). The Matford Brook, edged with scattered trees and dense scrub, bisects the Site. The update walkover survey found that the habitat types and distribution were consistent with the previous reports, with no changes to the management. The distribution of habitats within the Site is shown in **Figure 1**.

3.2 Update Survey Results - Fauna

The Site was found to support hazel dormouse, which were known to be present in the area, however not previously recorded on Site.

Within the detailed application area, emergence surveys in 2013 found bat roosts in Building 1 (B1) (occasional use by common pipistrelle and long-eared bat), Building 2 (B2) (occasional use by lesser horseshoe bat) and Building 3 (B3) (occasional use by common pipistrelle and long-eared bats). In 2019, B1 was found to support greater and lesser horseshoe bat, long-eared bat and pipistrelle species. Building 6 (B6) contained droppings of a long-eared bat species. Other buildings (B2, B3, B4, B5 and Waybrook Cottages) did not contain evidence but had some potential for roosting; emergence surveys are being undertaken in summer 2019. The buildings are subject to a separate application but are considered relevant due to flight-paths to and from the roosts which could be affected by the outline application.

3.3 Summary of Findings

Table 1 below summarises the ecological baseline conditions and evaluates their importance in accordance with CIEEM's geographic frame of reference (CIEEM, 2018), taking into account the previous survey work and the recent update. The key ecological constraints and opportunities are illustrated in **Figure 1**.

Table 1: Identified ecological features with the zone of influence and value (following CIEEM, 2018)

Ecological Feature	Value	Summary of Findings
Exe Estuary	European/ International	• Exe Estuary Special Protection Area (SPA), Ramsar Site and SSSI is 1.9km east. These are designated for supporting populations of European importance of over-wintering avocet *Recurvirostra avosetta* and *S*lavonian grebe *Podiceps auritus*, as a wetland of international importance and for regularly supporting at least 20,000 waterfowl; • The SSSI is also designated for vegetation communities including swamp, reed-beds, muddy shores and saltmarsh, an outstanding dragonfly assemblage and geological interest; • Teignbridge, Exeter and East Devon councils have identified a 10km consultation zone around certain SPA/ SACs, including the Exe Estuary, in which new housing could result in increased recreational pressure.
Dawlish Warren	European/ International	• Dawlish Warren Special Area of Conservation (SAC), located 11km south-east is designated for dune habitats and petalwort *Petalphyllum ralfsii;* • Dawlish Warren has a 10km consultation zone for residential impacts, however the Site is located outside this zone.
Locally designated sites	County	• The Farm (Exminster) County Wildlife Site (CWS), 0.7km south-east; • Matford Marsh CWS, 1.5km north-east; • Alphinbrook CWS, 1.5km north;

			• Exeter Canal CWS, 1.7km north-east; • Countess Wear CWS, 1.9km north-east; • The Matford Brook which runs through the Site is connected to Matford Marsh CWS which is designated for floodplain and grazing marsh with invertebrate interest. The Brook is also likely to be linked to Exeter Canal and Countess Wear CWS's.
Poor semi-improved grassland		Site	• The Site is dominated by two sheep-grazed, sloping fields of semi-improved grassland with low species diversity.
Marshy grassland		Site	• North of the brook is a strip of low-lying damp/ marshy grassland. The grassland is small in size and not particularly diverse.
Matford Brook		Local	• The brook bisects the Site and runs east. It has steep-sided but low banks, shaded by scattered trees and dense areas of scrub. The water is clear with a moderate flow over fine gravel.
Mature broadleaved trees		Local - District	• The Site supports a veteran sessile oak and several other over-mature and mature scattered trees (pedunculate oak, sessile oak and ash) both within hedgerows and open fields. These trees have high ecological and landscape value.
Woodland and scrub		Local	• A small block of plantation mixed woodland is located at the eastern boundary consisting of Norway maple, whitebeam, sycamore and conifers including some large specimens such as weeping willow. The woodland has poor understorey/ ground flora but still has value for a range of species; • A small area of scrub and trees (likely to be a former outgrown hedgerow) is located between the buildings and the stream. It is species-poor and heavily grazed at the shrub/ ground flora layer; • Broadleaved woodland is located along the western boundary (offsite) on the dual-carriageway embankment. The woodland comprises a range of native trees and shrubs and has a stream along its eastern edge, flowing into the brook.
Hedgerows		Local	• The Site's hedgerows are limited to a species-poor hedgerow along the north-western boundary adjoining Waybrook Lane and small sections of defunct, species-poor hedgerows along parts of the eastern boundary.
Amphibians and reptiles		Negligible	• The Site is within a Devon great crested newt *Triturus cristatus* consultation zone, due to a record in 2006, 4.4km away; • There are no suitable waterbodies within or adjacent to the Site (the brook is too fast-flowing) which provide breeding habitat for amphibians and they are considered unlikely to be present in any high numbers; • The majority of the Site is considered suboptimal for reptiles, with any population likely to be small and restricted to the eastern boundaries at the interface between woodland/ scrub and grassland, and the overgrown gardens in the north-east corner.
Badger		Negligible	• No badger setts or other evidence of badgers was recorded in either the 2018 or previous surveys, although there are several records within 2km. • The Site may be used occasionally for commuting but it is not considered to be of particular value for badgers.
Bats	Roosting	Local, up to County	• Bat roosts are present within buildings in the northern corner of the Site (B1 and B6). Buildings B2, B3, B4, B5 and Waybrook Cottages have high to low potential to support roosting bats. These buildings are subject to a separate application. The adjacent woodland (south) was considered to be of value to emerging bats; • Following aerial inspections of several trees with potential to support roosting bats, all 'Potential Roost Features' were ruled out and no roosts are present in trees.
	Foraging and Commuting	Local	• Transect and automated surveys in 2013 found that the Site supports at least seven species of commuting and foraging bats, mainly limited to the hedgerows in the northern part of the Site, water course and woodland edges. These habitats provide sheltered flight lines between the buildings and the A30 corridor and across the Site towards the Exe Estuary. Other, more exposed areas such as open fields, fences and poor-quality hedgerows had little value. Most activity was from

			pipistrelle species. Individual greater and lesser horseshoe bats were recorded along woodland/ scrub edge south of the buildings. • Given the location of roosts in the north-east corner of the Site, the northern hedgerows, eastern woodland block and stream corridor are likely to be of value as flight lines to and from roosts.
Birds		Local	• The Site lies within a Cirl Bunting Consultation Zone. Surveys in 2014 did not identify any cirl bunting within the Site (EAD Ecological Consultants, 2014) and recent correspondence with RSPB suggests that cirl bunting are not known to breed in the Alphington area (Helene Jessop, RSPB Assistant Conservation Officer, pers. Comm.). RSPB data suggests that the nearest territories are 1.5km south-east in the Exminster area. The Site offers little foraging habitat for this species; • There are barn owl records in the area, however no evidence of roosting or nesting has been recorded during the surveys. The heavily grazed fields provide poor foraging habitat for this species, given the lack of thatch for supporting small mammals; • The scrub, hedgerows and woodland provide suitable nesting habitat for a range of common garden and farmland species.
Dormice		Local - County	• Dormouse are present with five nests found during surveys. The nests were found within the north-western hedgerow and along the stream corridor however it is likely that they also utilise the woodland and dense scrub for nesting, foraging and commuting.
Invertebrates		Local	• The majority of grassland and hedgerow habitats offer limited potential to support rare or notable species, however the veteran and over-mature trees are likely to provide important habitat for a range of invertebrates, including those that specialise in deadwood habitats. • The stream and marshy grassland also provide invertebrate interest.
Otter		Local	• There are several records of otter in the local area and the Matford Brook which crosses the Site provided suitable commuting habitat for this species, including safe passage beneath the A30 and Chudleigh Road. No evidence was found to suggest regular use by this species and no holts or other places of shelter were identified, however their presence cannot be ruled out.

4 FURTHER SURVEY WORK

Three emergence surveys are being undertaken between May and June 2019 on the buildings affected by the detailed application. This will inform a Natural England mitigation licence prior to building demolition as part of the detailed consent.

No other ecological survey work is considered necessary for this application; however any changes to the proposed masterplan or if any significant amount of time has passed since the date of this report, a re-appraisal may be required.

5 IMPACT ASSESSMENT AND MITIGATION STRATEGY

Given that the baseline conditions are not considered to have significantly altered since the production of the previous ecology reports and the development extent and scale is largely consistent with the outline application, no significant change is considered to have occurred in relation to the predicted effects of the proposed development.

The detailed design takes into account the impacts identified in the Ecology Chapter of the ES and ensures that no adverse effects will occur to ecological features.

5.1 European Sites

The Site lies within 10km of the Exe Estuary Special Protection Area (SPA) and Ramsar Site. This has been identified in Policy EN10 as being at risk of increased recreational pressure as a result of new

accommodation. A Joint Interim Approach has been agreed with East Devon, Teignbridge and Exeter councils (The South-east Devon European Site Mitigation Strategy (Footprint Ecology, 2014)), which requires a financial contribution (per new dwelling, within 10km) to provide management and other measures to protect these areas. This is detailed in the Section 106 agreement for a contribution of '£96 per dwelling towards the provision of non-infrastructure measures to mitigate and/or offset impacts on the Exe Estuary'. As part of Policy SWE3, the council will deliver Ridge Top Park to provide Suitable Alternative Natural Greenspace (SANGS) to attract recreational pressure away from the Estuary and other local European sites.

Other impacts relate to the construction phase and comprise the risk of dust and runoff (airborne and water pollution). These impacts are expected to be minor given the distance between the Site and the European sites, however the risk will be minimised through the adoption of a Construction Environmental Management Plan (CEMP) and the restriction on any earthworks within 10m of the stream corridor unless specific pollution control measures are in place.

Water pollution and increased run-off during operation will be controlled via a Sustainable Drainage System (SuDS)

5.2 Locally Designated Sites

The Site is connected to Matford Marsh, Exeter Canal and Countess Wear CWS's via the Matford Brook which runs through the Site and eventually reaches the River Exe. Water pollution and increased surface water runoff will be minimised and managed as described above, preventing any risk to locally designated sites during construction and operation.

5.3 Habitats

5.3.1 Poor semi-improved grassland

The proposed development will result in all poor semi-improved grassland on Site being lost. This is a significant adverse effect at the Site level only, as the grassland is species-poor and not considered of particularly high ecological value.

The design includes a large area of public open space, mainly along the Matford Brook, as well as buffer strips alongside woodland, hedgerows and around mature trees. To ensure no net loss of biodiversity, these areas should be seeded/ managed to provide a more species-diverse sward than existing.

A Landscape and Ecology Management Plan (LEMP) will be adhered to in perpetuity.

5.3.2 Marshy grassland

Marshy grassland, located within the flood zone north of the Matford Brook will be retained as part of the development. To protect it during construction, temporary fencing must be installed, and no access allowed for vehicles, machinery or materials. A long-term management plan will ensure this area is retained and enhanced in the future, to maintain a diverse wetland/ damp flora.

5.3.3 Matford Brook

Whilst the brook is being retained and a large buffer zone incorporated into the design, there is potential for adverse impacts during construction including pollution and accidental damage.

To mitigate for these effects, no works will take place within a minimum buffer of 10m. Any works required within 10m (e.g. planting, footpath construction) will need to ensure specific pollution measures are put in place, to be detailed in the CEMP. No materials or machinery, or storage compounds will be

permitted within the flood zone of the brook to prevent contaminated runoff entering the watercourse at times of high rainfall. No works vehicles will be permitted to cross or enter the watercourse. Pollution prevention measures will be adhered to at all times in accordance with best practice guidance.

During operation, SuDS will prevent adverse impacts as a result of pollution and increase surface water runoff.

Access to the brook by the public will also be managed to prevent widespread access and disturbance to the bankside vegetation. This will be achieved through the creation of footpaths through the Public Open Space and planting of dense shrubs along sections of the water course. This will allow access to some, but not all of the watercourse and will reduce uncontrolled access by dogs. The stream corridor will be managed in accordance with the LEMP.

5.3.4 Mature broadleaved trees

Mature and veteran trees are being retained as part of the development and incorporated into open space. During construction trees will be protected in accordance with the Arboricultural Method Statement (Green Ecology, 2019). Long-term management will be in accordance with the LEMP.

5.3.5 Woodland and scrub

The mixed plantation woodland along the eastern boundary will be retained, with some removal of semi-mature and early-mature trees to allow for road access and visibility splays at the northern end. The offsite woodland along the western boundary will be fully retained. The scrub will be removed, and whilst of low intrinsic value, is likely to provide nesting and foraging for faunal species.

Preventable adverse impacts include accidental damage during construction (e.g. compaction of roots) and inappropriate access and management during the operational phase. To mitigate this, the woodland will be protected in accordance with the Arboricultural Method Statement (Green Ecology, 2019) during construction.

The woodland will be enhanced though additional understorey and edge planting and managed in accordance with the LEMP. This will compensate for the loss of scrub and strengthen the ecological value of the woodland for flora and fauna.

5.3.6 Hedgerows

The only hedgerow of real value, along the northern boundary, will be fully retained as part of the development. Accidental damage will be controlled in accordance with the Arboricultural Method Statement (Green Ecology, 2019).

During operation, the retained hedgerow will be buffered with a minimum of 1m wide strip of long/ rough grassland. Any hedgerow losses will be compensated for on a minimum 2:1 basis. Hedgerows will be managed in perpetuity in accordance with the LEMP to maintain dense, bushy structures a minimum of 3m tall and 1m wide.

5.4 Fauna

5.4.1 Amphibians and reptiles

There is a small possibility of direct effects (killing and injury) to common amphibians and reptiles during the construction phase during removal of sections of scrub and long grassland. To minimise adverse effects, a hand search of suitable habitats (e.g. hedgebank or long grass) should be undertaken prior to site clearance. Refugia will be used to assist this process in any habitat deemed of higher potential to

support reptiles in areas of construction, in particular within the overgrown gardens in the north-eastern part of the Site. Any animals will be moved to a nearby place of safety such as open space or retained hedgerow bases.

5.4.2 Badger

There is potential for badgers to become trapped in excavations during the construction phase. To prevent this, the construction team are to maintain the Site in a tidy and efficient manner, with any excavations provided with a means of escape (e.g. ramped side or plank) and pipes over 200mm capped off at night.

5.4.3 Bats

Commuting/ foraging bats

Whilst the main commuting and foraging habitat for bats; hedgerows, woodland and the watercourse will be retained, there will be small amounts of habitat loss as well as impacts from light-spill.

Light-spill in particular during construction and operation is likely to have adverse effects on commuting bats which are sensitive to light, including *Myotis* species, long-eared bats and the rarer species; greater horseshoe bat and lesser horseshoe bat. Lighting and habitat removal can lead to fragmentation effects leading to bats having to use longer commuting routes. Commuting routes for bats are not specifically protected, however it is recognised that fragmentation effects can impact roosts as a result of roost abandonment or reduced population size.

The design incorporates large buffer areas adjacent to the more important habitats for bats, comprising the central stream corridor (minimum 5m each side), the offsite woodland (minimum 5m buffer) and the eastern woodland (minimum 5m buffer). These corridors will be maintained across and around the Site, with the habitats enhanced to increase invertebrate prey and light-spill kept below 0.5lux. Connectivity will further be enhanced by planting hedgerows along the Site boundaries and strengthening of woodland and streamside vegetation.

Roosting

Careful consideration must be given to enabling dark flight lines to remain functional for retained or replacement roosts within the detailed application area in the north-east corner. Vegetated corridors will be required between roosts and retained woodland/ hedgerows. Light levels at roost entrances and along connective flight-paths must not exceed 0.5 lux.

5.4.4 Birds

The development will result in minor losses of hedgerow habitat, scrub and trees which could result in direct effects (destruction of eggs and nests) during Site clearance. This risks committing an offence under current legislation. Given the small amounts to be lost, vegetation removal is unlikely to have significant adverse effects on breeding birds.

Clearance of all habitats is to be undertaken outside the breeding bird season which runs March – August inclusive, or subject to a pre-clearance check by an ecologist within 24 hours of works. Any active nests would need to be protected with a suitable buffer until all chicks have fledged.

5.4.5 Dormice

Whilst the vegetation in which dormice were recorded is not being impacted by the development, other suitable vegetation such as scrub and woodland will be removed and it is accepted that dormice may use these habitats for foraging and commuting, and potentially for nesting in future years.

Any works involving scrub, woodland or hedgerows therefore has the potential to kill, injure or disturb dormice and destroy a resting place in breach of the UK Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017.

A European Protected Species (EPS) licence will be obtained from Natural England prior to any works commencing on Site. To comply with European and National legislation, a Method Statement will be produced, and the following methods employed to remove the hedgerow:

- The retained hedgerows, woodland and stream corridor will be protected with temporary fencing for the duration of construction to prevent accidental damage;
- Vegetation removal of scrub, trees or hedgerow habitats will be overseen by a licensed ecologist following a contractors briefing. This will entail either coppicing in winter, followed by removal of root balls after hibernation, or shrub removal in sections of no more than 50m per day in either late spring (May - early June) or autumn (September – October) when dormice are least sensitive to disturbance;
- Compensatory habitat will be provided; it is recommended that at least twice the amount lost is provided, which can comprise native species-rich hedgerows or woodland planting. The planting should be in locations that provide connectivity for commuting and/or additional cover from predation, for example the western boundary and strengthening the woodland edge or stream corridor. Planting should include a high percentage of food-producing shrubs throughout different seasons, including hazel, hawthorn and oak, as well as honeysuckle for nest building;
- Five dormouse boxes will be provided in retained woodland;
- A management plan will be implemented to ensure the long-term suitability of habitats is maintained.

5.4.6 Invertebrates

No specific mitigation is required for invertebrates, given that the higher quality habitats (hedgerows, stream corridor and veteran trees) are being retained.

Enhancement measures detailed below will benefit invertebrates in the long-term.

5.4.7 Otter

Otters using the watercourse for commuting could be subject to disturbance effects (noise, lighting and visual disturbance) during both construction and operation.

To mitigate, construction must only take place in daylight hours and no lighting must be directed at the water course. No construction vehicles or machinery will be allowed to access the banks or watercourse. Measures will be secured in the CEMP.

During operation, a large buffer has been incorporated into the design which will reduce adverse effects during the night. Additional planting along the brook will also be undertaken to provide permanent cover for commuting otter. Informal pathways are also being created within the POS and some sections of the banks will be made inaccessible to discourage widespread/ uncontrolled access to the banks. Long-term management via the LEMP will ensure the watercourse remains suitable for commuting otter.

5.5 Summary of Mitigation

A detailed mitigation strategy during enabling, construction and operation is provided within a separate Landscape and Ecological Management Plan (FPCR, 2019), which also details the long-term management for each ecological feature. A summary is provided in **Table 2** (refer to the ES for original details) and illustrated in **Figure 2**.

Table 2: Summary of impact assessment, mitigation and residual effects

Ecological Feature	Value	Likely Impacts During Construction and Operation	Avoidance and Mitigation Measures	Compensation	Residual Effects
Exe Estuary	European/ International	• Increased recreational disturbance effects, particularly in-combination with other developments in the Teignbridge, Exeter and East Devon districts; • Waterborne pollution during construction and operation via the Matford Brook which runs through the Site.	• Contributions in accordance with local policy to offset recreational impacts; • A Construction Environmental Management Plan (CEMP) will be adhered to, which will include measures to control waterborne pollution. No earthworks within 10m of the stream unless specific pollution control measures are in place; • Detailed drainage strategy to ensure no increase in surface water flow to the Matford Brook and mitigation to minimise any risk of pollutants entering the watercourse.	N/A	Neutral
Dawlish Warren	European/ International	• Waterborne pollution during construction and operation.	• CEMP will be adhered to, which will include measures to control waterborne pollution. • Detailed drainage strategy to ensure no increase in surface water flow to the Matford Brook and mitigation to minimise any risk of pollutants entering the watercourse.	N/A	Neutral
Locally designated sites	County	• Waterborne pollution during construction and operation to Matford Marsh, Exeter Canal and Countess Wear CWS's via the Matford Brook which runs through the Site.	• CEMP will be adhered to, which will include measures to control waterborne pollution. • Detailed drainage strategy to ensure no increase in surface water flow to the Matford Brook and mitigation to minimise any risk of pollutants entering the watercourse.	N/A	Neutral
Poor semi-improved grassland	Site	• Loss of approx. 4.8ha.	• Retained grassland around mature trees and stream to be protected during construction via the CEMP; • Retained grassland enhanced with plug planting or seeding with native species, managed to create diverse sward.	Areas of temporary disturbance to be reinstated with suitable grassland mix – using meadow mixtures in more informal areas.	Loss - not significant.
Marshy grassland	Site	• Damage/ inappropriate management.	• Retain and protect during construction via the CEMP – no access permitted to damp areas; • Retain with long-term enhancement via a LEMP.	None required.	Neutral
Matford Brook	Local	• Waterborne pollution during construction and operation; • Recreational disturbance to banks, channel and associated flora.	• The brook will be protected in accordance with the CEMP – no access to construction traffic will be permitted across the brook and no storage of materials in flood zone; • During operation, a large buffer (at least 7m wide) has been incorporated into the design. Informal pathways will be provided to discourage widespread access to the banks;	None required.	Neutral

Ecological Feature	Value	Likely Impacts During Construction and Operation	Avoidance and Mitigation Measures	Compensation	Residual Effects
			• Additional planting will form sections of dense vegetation, restricting access to the water.		
Mature broadleaved trees	Local - District	• Loss of two trees; • Accidental damage; • Inappropriate management.	• Trees have been incorporated into the design wherever possible, within a buffer area of POS; • Protect during construction in accordance with Arboricultural report, following BS5837:2012 Trees in Relation to Design, Demolition and Construction and Policy EN12; • Long-term management of trees and surrounding POS via a LEMP.	None required.	Neutral
Woodland	Local	• Minor loss (240m^2) of the eastern woodland to provide access and visibility splays; • Accidental damage; • Inappropriate management.	• The woodland has been incorporated into the design to retain as much as possible. Neither onsite or offsite woodland will form boundaries of properties; • Protection during construction will be undertaken in accordance with Arboricultural report, following BS5837:2012 Trees in Relation to Design, Demolition and Construction and Policy EN12; • Creation of pathways through retained woodland to manage access; • Long-term management via LEMP.	New woodland planting to exceed the amount lost.	Positive
Hedgerows	Local	• Loss of 60m; • Accidental damage; • Inappropriate management.	• Protect retained hedgerows from unnecessary damage during construction using temporary fencing; • No hedgerow removal without a European Protected Species Licence (EPSL) for dormice; • All retained hedgerows will be kept outside individual property ownership to allow long-term management in accordance with the LEMP.	Any losses will be compensated for, with at least twice the amount lost being replanted.	Positive
Amphibians and reptiles	Negligible	• Small possibility of direct effects (killing/ injury) during the construction phase.	• Hand search of any suitable habitats (e.g. woodland/ scrub edge) prior to clearance and removal of any animals to a nearby place of safety. Refugia used to aid capture in high potential areas.	N/A	Neutral
Badger	Negligible	• Potential for this species to become trapped in excavations during construction.	• Construction team to maintain site in tidy and efficient manner, with any excavations provided with a means of escape (e.g. ramped side or plank) and pipes over 200mm capped off at night.	None required.	Neutral
Bats	Local – County	• Habitat fragmentation for commuting bats, associated with artificial illumination during construction and operational	• The main corridors of value to bats have been retained within the design. A minimum 5m buffer zone has been incorporated, adjacent to the offsite woodland, Matford Brook corridor and retained onsite woodland;	N/A	Neutral

Ecological Feature	Value	Likely Impacts During Construction and Operation	Avoidance and Mitigation Measures	Compensation	Residual Effects
		phases.	During construction and operation, no lighting is to be directed at the bat corridors (see **Figure 2**) or at bat roosts/ flight lines within the north-east corner. Best practice technology should be employed.		
Birds	Local	Direct effects (killing and destruction of nests) during Site clearance.	Clearance of all habitats to be undertaken outside the breeding bird season which runs March – August inclusive, or subject to a pre-clearance check by an ecologist within 24 hours of works. Any active nests would need to be protected with a suitable buffer until all chicks have fledged.	Hedgerows and woodland planting included within design.	Positive
Dormice	Local - County	Direct effects: killing, injury and disturbance; Increased disturbance e.g. domestic pets.	Removal of hedgerow habitat to be undertaken in accordance with an EPS licence, including sensitive timings and an ecological clerk of works; A management plan to ensure hedgerows are maximised in terms of functionality and connectivity for dormice.	Compensatory hedgerow/ woodland planting at a rate that exceeds the amount lost, in areas that enhance connectivity and cover. Woodland planting to include thorny species to discourage access. Five dormouse boxes installed. Hedgerow planting to include high percentage of food- producing species.	Neutral
Invertebrates	Local	No significant effects predicted – stream and mature/ veteran trees being retained.	N/A	N/A	Neutral
Otter	Local	Construction and operational effects include lighting and noise disturbance to commuting otter.	CEMP – restrict working hours to daylight and prevent construction traffic from accessing the brook or banks; During operation, a large buffer has been incorporated into the design. Informal pathways will be provided to discourage widespread access to the banks; Additional planting will form sections of dense vegetation, restricting access to the water The brook will be kept dark at all times.	N/A	Neutral

6 ENHANCEMENTS

In addition to the mitigation requirements above, the following enhancements are recommended in order to achieve a **net gain for biodiversity** in accordance with the aims of the NPPF and local policy:

- Install integrated bat boxes at a rate of 1 in 20 buildings;
- Install integrated house sparrow boxes at a rate of 1 in 40 dwellings;
- Install 10 general purpose bird boxes and 9 bat boxes (in groups of 3) within retained woodland;
- Native species-rich hedgerow planted along the south-western boundary to enhance connectivity for a range of wildlife species, along the A30 corridor;
- POS to be seeded with a wildflower grassland, where practicable;
- Buffer zones of at least 5m adjacent to the woodlands and stream to be planted with native scattered shrubs, wildflower grassland and plug plants (including night-scented varieties), as appropriate, to enhance foraging for invertebrates and bats;
- Log piles/ hibernacula to provide habitat for reptiles/ amphibians/ invertebrates;
- Residential/ formal planting to include high percentage of wildlife-friendly species, such as those listed on RHS Perfect for Pollinators List.

7 MONITORING

Monitoring should be undertaken to ensure that the mitigation described in this report has been undertaken to a satisfactory standard. This applies to both the construction and operation phases of the development. Dormouse and bat monitoring will be required, in accordance with the licence.

8 CONCLUSIONS

In summary, the Site supports several protected and notable species and habitats which could be impacted as a result of the development. Mitigation and compensation measures have been incorporated into the design to ensure that the proposal and work programme is designed to minimise adverse impacts on ecological features. For example, avoidance measures include the retention and buffering of veteran/ mature trees, hedgerows, woodland and the stream corridor. Sensitive timing and protection measures will be adhered to during enabling/ construction to minimise impacts to habitats, breeding birds, otter and bats. Natural England EPS licenses will be required for dormice prior to vegetation removal. Compensation measures include native hedgerow/ shrub planting and wildflower buffers, ensuring that connectivity is maintained and enhanced.

The development may increase recreational pressure on European designated site: Exe Estuary, therefore in accordance with the South-east Devon European Site Mitigation Strategy a financial contribution (per new dwelling, within 10km) will be made to provide management and other measures to protect these areas.

Enhancement recommendations have also been outlined with the aim of providing a net biodiversity gain, contributing to the aims of National Planning Policy Framework and local policy, including bat, bird and dormouse boxes, species-rich grassland, wetland areas and additional hedgerow planting.

Provided that the measures outlined in this report can be achieved, it is considered that the proposed development will result in a net gain for biodiversity. A summary of the predicted net gains and losses to biodiversity is illustrated in **Table 3.**

Table 3: Indicative biodiversity net loss and gains

Ecological receptor	Loss	Gain
Grassland	4.8ha	1.4ha
Woodland	0.024ha	0.3ha (woodland edge planting)
Hedgerows	60m	631m
Native bulbs	None	0.4ha
Stream/ ditches	None	None

9 REFERENCES

Bright P.W., Morris P.A. and Mitchell-Jones A. (2006) *Dormouse Conservation Handbook, 2nd Edition*. English Nature, Peterborough.

Business Location Services Ltd (2015) *Environmental Statement Volume 1 – Land off Chudleigh Road, Alphington, Exeter.* On behalf of Westcountry Land (Alphington) Ltd.

BSI (2012) *BS5837: 2012 Trees in Relation to design, demolition and construction. Recommendations.* British Standards Institution, London, UK.

BSI (2013) *BS42020: 2013 Biodiversity. Code of practice for planning and development.* British Standards Institution, London, UK.

Chanin P. (2003) *Ecology of the European Otter.* Conserving Natura 2000 Rivers Ecology Series No 10. English Nature, Peterborough.

CIEEM (2017) *Guidelines for Preliminary Ecological Appraisal, 2nd edition.* Chartered Institute of Ecology and Environmental Management, Winchester.

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

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

Defra (2011) *Biodiversity 2020: A strategy for England's wildlife and ecosystem services.*

EAD Ecological Consultants (2014) *Cirl Bunting Nesting Survey Report – Land off Chudleigh Road, Alphington.* Ref: P562/MC/2645/14

Eaton M., Aebischer N., Brown A., Hearn R., Lock L., Musgrove A., Noble D., Stroud D. and Gregory R. (2015) *Birds of Conservation Concern 4: the population status of birds in the UK, Channel Islands and Isle of Man.* British Birds 108: 708-746.

Green Ecology (2013a) *Preliminary Ecological Appraisal – Land off Chudleigh Road, Alphington, Exeter.* Report ref: 0032-NG.

Green Ecology (2013b) *Bat Survey Report – Land off Chudleigh Road, Alphington, Exeter.* Report ref: 0032-BA-ND.

HMSO (1997) *The Hedgerow Regulations*, Statutory Instruments 1997 No. 1160.

Joint Nature Conservation Committee (2010) *Handbook for Phase 1 Habitat Survey - a Technique for Environmental Audit.* Reprinted by JNCC, Peterborough.

Liley, D., Hoskin, R., Lake, S., Underhill-Day, J. & Cruickshanks, K. (2013) *South-east Devon European Site Mitigation Strategy.* Footprint Ecology. Unpublished report for East Devon District Council, Exeter City Council and Teignbridge District Council.

Russ, J.M. (2012) *British Bat Calls: A Guide to Species Identification.* Pelagic Publishing, Exeter.

Stace, C. (2010) *New Flora of the British Isles (3rd Edition)*. Cambridge University.

Map Legend

- Semi-improved grassland
- Marshy/ wet grassland
- Broadleaved woodland
- Dense scrub and trees
- Wet woodland
- Neglected gardens/ allotments
- Hard standing
- Building
- Buildings - outside scope of survey
- Species-poor hedgerow
- Water course
- Ditch
- Fence
- Scattered scrub
- Tree with negligible bat roost potential (following detailed assessment)
- Key bat routes to be maintained
- Dormouse nest recorded

N

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Ordnance Survey 0100031673.

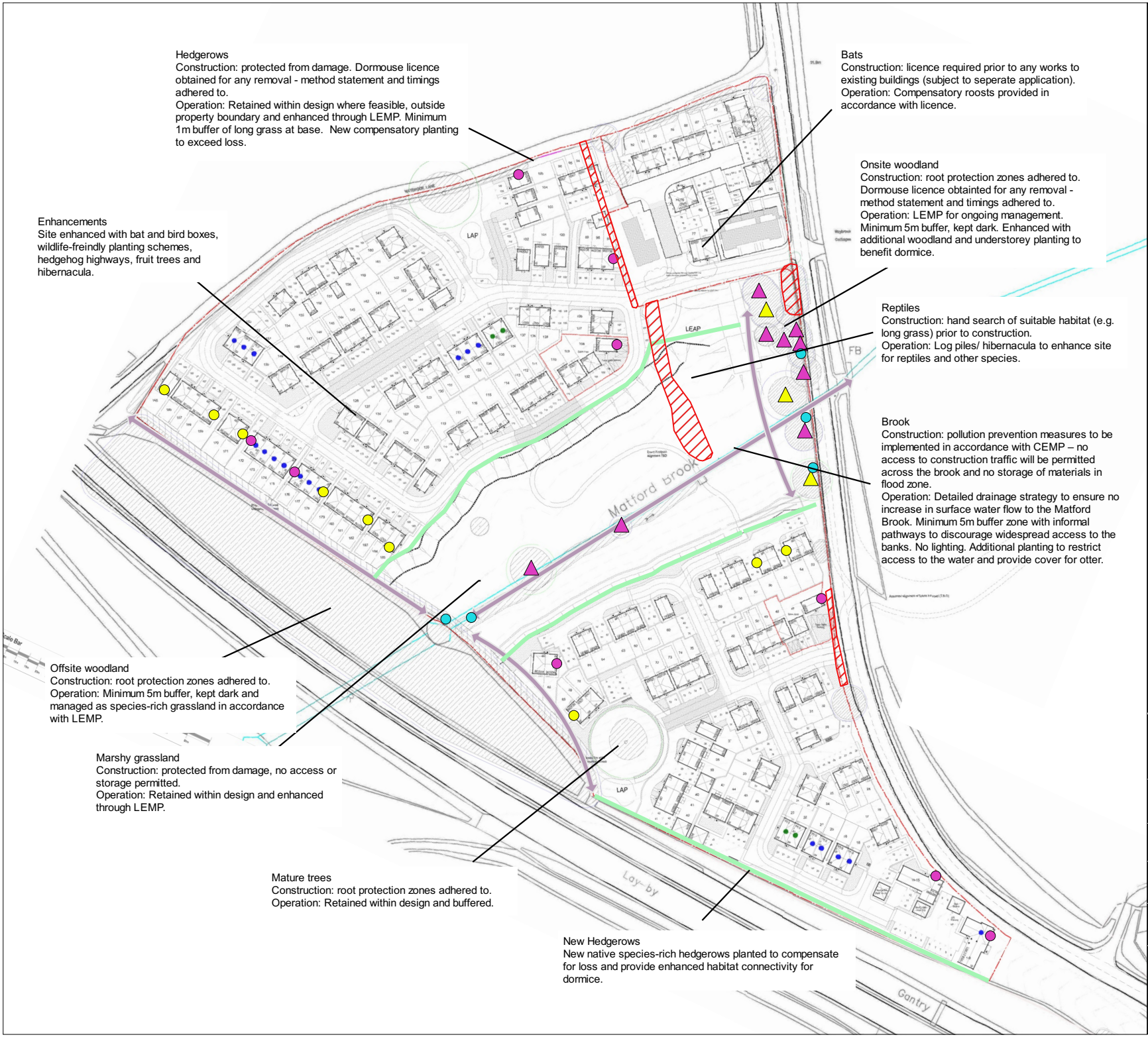
Figure 1: Extended Phase 1 Habitat & Protected Species Survey Results

Project: Victoria Heights, Chudleigh Road

Client: Barratt David Wilson Homes

23/05/2019	Version: 2	Ref:0032-EclA-1	Drawn by: FM

greenecology



Legend

- Dormouse box
- Bird box - tree mounted
- Bird box - integrated
- Bat box (group of 3) - tree mounted
- Bat box - integrated
- Dark corridor - 0.5lux within 5m of boundary
- New native hedgerow
- Woody vegetation to be removed

Refer to landscape drawings for details of habitat retention and creation.

N

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Figure 2: Mitigation Strategy

Project: Victoria Heights, Chudleigh Road

Client: Barratt David Wilson Homes

29/05/2019	Version: 3	Ref:0032-EcIA-2	Drawn by: FM

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Appendix 1 – Devon Wildlife Checklist

Species - terrestrial, intertidal, marine	Walkover shows that suitable habitat present and reasonably likely that the species will be found? Tick or cross	Detailed survey needed to clarify impacts and mitigation requirements ?	Detailed survey carried out and included?	Species Present or Assumed to be present on site Indicate with P or A and name the species	Impact on species ?	Detailed Conservation Action Statement included? Sets out actions needed in relation to avoidance, mitigation, compensation, enhancement	EPS offence committed? Three tests met?	Grid ref for specific location of species (for large sites)
Bats (roost)	✓	✓	✓ & to be updated	✓	✓	✓	✓	SX 918 890
Bats (flight line / foraging habitat)	✓	✓	✓	✓	✓	✓	x	
Dormice	✓	✓	✓	✓	✓	✓	✓	
Otters	✓	x	x	x	✓	✓		
Great crested newts *(*check consultation zone)*	X							
Cirl buntings (**check consultation zone*)	X							
Barn owls	X							
Other Schedule 1 birds	X							
Breeding birds	✓	x	x	✓	✓	✓		
Reptiles	✓	x	x	✓	✓	✓		
Native crayfish	X							
Water voles	X							
Badgers	X							
Other protected species	X							
UK BAP priority species	✓	x	x	✓	✓	✓		
Devon BAP key species	X							
Invasive species	X							

Designation Terrestrial, intertidal, marine	Within site or potential impact. Tick or cross	Name of site / habitat	Detailed Conservation Action Statement inc. in report ?	Habitat balance sheet included (showing area of habitats lost, gained & overall net gain)	Relevant organisation consulted & response included in the application?
Statutory designations					
European designations - Special Area of Conservation (SAC), Special Protection Area (SPA) and RAMSAR site or within Greater Horseshoe consultation zone	✓	Exe Estuary.	Sufficient information included in order for the LPA to undertake an HRA? ✓		
Site of Special Scientific Interest (SSSIs)	X				
Marine Conservation Zone (MCZ)	X				
Local Nature Reserve (LNR)	X				
Non statutory wildlife designations					
County Wildlife Site (CWS)	X				
Ancient woodland	X				
Special Verge	X				
UK BAP Priority habitat	X				
Local Biodiversity Network (mapped by Devon Wildlife Trust / through Green Infrastructure work)	X				
Non statutory geological designation					
County Geological Site (CGS or RIGS)	X				

Appendix 2 – Planning Policy and Legislation

Habitat and Species Legislation

Species and habitats receive legal protection in the UK under various legislation, including:

- The Wildlife and Countryside Act (WCA) 1981 (as amended);
- The Conservation of Habitats and Species Regulation 2017 (also known as the Habitat Regulations, it implements the EU Habitats Directive in England and Wales);
- The Countryside Rights of Way (CRoW) Act 2000;
- The Hedgerows Regulations 1997;
- The Protection of Badgers Act 1992; and
- The Natural Environment and Rural Communities (NERC) Act 2006.

Where relevant, this report takes into account the legislative protection afforded to specific habitats and species.

National Planning Policy Framework

The National Planning Policy Framework (NPPF) sets out the Governments planning policies for England and how local planning authorities should incorporate them into their own policies and plans. Chapter 15 of the NPPF contains several policies targeted at enhancing the natural environment and requires local authorities to consider how impacts on biodiversity can be minimised and provide net gains in biodiversity. Paragraph 170 states that:

"Planning policies and decisions should contribute to and enhance the natural and local environment by:

> *a) protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);*
>
> *b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland;*
>
> *c) maintaining the character of the undeveloped coast, while improving public access to it where appropriate;*
>
> *d) minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;*
>
> *e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and*
>
> *f) remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate."*

Additional Planning Practice Guidance (PPGs) supports the NPPF and includes guidance on:

- Landscape;
- Biodiversity, ecosystems and green infrastructure; and

- Brownfield land, soils and agricultural land.

Regional/ Local Planning Policy

The Teignbridge Local Plan 2013 – 2033 sets out the Council's vision for the district and forms part of the decision-making process on planning applications. It contains the following relevant policies which were considered as part of this report:

- EN8 Biodiversity Protection and Enhancement;
- EN9 Important Habitats and Features;
- EN10 European Wildlife Sites;
- EN11 Legally Protected and Priority Species; and,
- EN12 Woodlands, Trees and Hedgerows.

UK Post-2010 Biodiversity Framework

The UK Biodiversity Action Plan (UK BAP) was succeeded in 2012 by the 'UK Post-2010 Biodiversity Framework' which demonstrates a whole-environment strategy on how the UK contributes to achieving the Convention on Biological Diversity's (CBD) 20 Aichi Biodiversity Targets. In England, 'Biodiversity 2020: A strategy for England's wildlife and ecosystem services' (Defra, 2011) sets out the strategic direction for biodiversity policy in the future. The former UK BAP was used to draw up lists of species and habitats of 'principal importance' which continue to be regarded as priorities under the Post-2010 Biodiversity Framework and are identified under Section 41 of the NERC Act 2006; these species have been considered throughout this report.

Local Biodiversity Action Plan

The Nature of Devon – A Biodiversity and Geodiversity Action Plan was revised by the Devon Biodiversity Partnership in 2005. The document takes into account the objectives and targets of the former UK BAP and translates these within a local context. The Plan contains action plans for five common themes, 20 key habitats and 20 key species, which are a consideration in planning decisions.

Appendix 3 – Desk Study

Method

A desk-based study was undertaken in August 2018 whereby:

- Devon Biodiversity Records Centre (DBRC) was contacted for records of protected/ notable species and sites designated for nature conservation value within a 2km radius of the Site boundary, extended to 4km for bat species;
- RSPB was contacted for records of cirl bunting within a 2km radius of the Site, within the past 10 years;
- MAGIC (www.magic.gov.uk) was searched for Priority Habitats and European Protected Species licenses issued by Natural England within 1km of the Site and European designated Natura 2000 sites within 10km;
- Aerial photography of the wider area was reviewed to identify possible important habitat features for bat activity;
- Previous reports were also reviewed with any relevant results provided in the appropriate sub-sections.

Results

Designated Sites

The Site is within 2km of the Exe Estuary Site of Special Scientific Interest (SSSI), Special Protection Area (SPA) and Ramsar site. Downstream, Dawlish Warren Special Area of Conservation (SAC) is approximately 12km from the Site. There are five non-statutory designated County Wildlife Sites (CWS) within 2km. County Wildlife Sites do not have any legal status but are identified by local authorities under the Local Plan (as a requirement of the NPPF) due to their local conservation interest and are a material consideration when planning applications are being determined. A summary is provided in **Table 3.1**.

In addition there are eleven Other Sites of Wildlife of Wildlife Interest (OSWI) and four Unconfirmed Wildlife Sites (UWS) within 2km. OSWIs are sites of significant wildlife interest within a local context but do not reach the criteria for a CWS; they are not covered by NPPF, but may be included in Local Plans. UWS's are sites identified as having possible interest but not fully surveyed.

Table 3.1: Designated sites records within 2km of Site boundary

Site Name	Location	Description
Natura 2000 Sites		
Exe Estuary SPA and Ramsar	1.9km east	This site qualifies under **Article 4.1** of Directive (79/409/EEC) by supporting populations of European importance of the following species listed on Annex I: **Over winter;** • Avocet *Recurvirostra avosetta*, 359 individuals representing at least 28.3% of the wintering population in Great Britain (5 year peak mean 1991/2 - 1995/6); • Slavonian grebe *Podiceps auritus*, 20 individuals representing at least 5.0% of the wintering population in Great Britain (5 year peak mean 1984/85-1988/9) **Assemblage qualification: A wetland of international importance.** The area qualifies under **Article 4.2** of the Directive (79/409/EEC) by regularly supporting at least 20,000 waterfowl, including: black-tailed godwit *Limosa limosa islandica*, dunlin *Calidris alpina alpina*, lapwing *Vanellus vanellus*, grey plover *Pluvialis squatarola*, oystercatcher *Haematopus ostralegus*, red-breasted merganser *Mergus serrator*, wigeon *Anas penelope*, dark-bellied brent goose *Branta bernicla bernicla*, cormorant *Phalacrocorax carbo*, avocet *Recurvirostra avosetta*, slavonian grebe *Podiceps auritus* and whimbrel *Numenius phaeopus.*

Site Name	Location	Description
Dawlish Warren SAC	11km south-east	**Annex I habitats** that are a primary reason for selection of this site: • 2190 Humid dune slacks Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site: • 2120 "Shifting dunes along the shoreline with Ammophila arenaria ("white dunes")" • 2130 "Fixed coastal dunes with herbaceous vegetation ("grey dunes")" Priority feature **Annex II species** that are a primary reason for selection of this site: • 1395 Petalwort *Petalophyllum ralfsii*
Statutory Designated Sites		
Exe Estuary SSSI	1.9km east	The SSSI includes the estuary, foreshore and surrounding low-lying land. The SSSI has 21 notified features, comprising various non-breeding birds, vegetation communities including swamp, reed-beds, muddy shores and saltmarsh, an outstanding dragonfly assembalge and geological interest.
County Wildlife Sites		
The Farm (Exminster)	0.7km south-east	51.5ha mixed farmland with bird interest
Matford Marshes	1.5km north-east	14.8ha floodplain and grazing marsh with dragonfly and bird interest
Alphinbrook	1.5km north	3.1ha mesotrophic running water and wet woodland
Exeter Canal	1.7km north-east	9ha canal with botanical and dragonfly interest
Countess Wear	1.9km north-east	49.8ha floodplain and grazing marsh site with areas of scrub and broadleaved woodland. Dragonfly interest.

EPS Mitigation Licences

There are two issued EPS mitigation licences within 2km of the Site, for common pipistrelle and soprano pipistrelle (EPSM2012-5360) and otter (2016-24178-SPX-MIT). These are not on, or considered to be connected to the Site.

Priority Habitats

No habitats of principal importance (HPI) were shown using MAGIC within the Site boundary.

There are several 'Exeter Green Spaces A' within 2km of the Site – these are non-designated or notable areas which are part of the Exeter Biodiversity Reference Map, which contributes to the Green Infrastructure Strategy for the Exeter Area and East Devon Growth Point. Greenspace Tier A are areas that support wildlife-rich assemblages that do not meet the HPI criteria. Examples of such habitats could include scrub, semi-improved grassland, broadleaved plantation woodland, watercourses, rank vegetation etc.

Protected and Notable Species

Records of note provided by DBRC are provided below:

- Badger *Meles meles:* there are 24 records of within 2km of the Site; three are within 500m and are located on the A30 and A379 (presumably road traffic accidents);
- European otter *Lutra lutra* (WCA, EPS, SPI): 21 records within 2km including several on the surrounding A-roads (presumably road traffic accidents) upstream on the Matford Brook (which flows through the Site) and on the Alphin Brook and Exeter Canal to the north and north-east;
- Hazel dormouse *Muscardinus avellanarius* (WCA, EPS, SPI): two records in 2006 and 2015 in Shillingford Abbot 400m west;
- Brown hare *Lepus europaeus* (SPI): one record from 2000 approx. 1.5km north-west;

- Hedgehog *Erinaceus europaeus* (SPI): five records between 1999 and 2012 including within Alphington;
- Grass snake *Natrix natrix* (WCA, SPI): seven records, the closest 1.5km from Site, mainly located near watercourses such as Exeter Canal, Matford Marshes and Riverside Valley Park;
- Slow worm *Anguis fragilis* (WCA, SPI): two records located in allotments in Alphington approximately 1km north/ north-east;
- Common toad *Bufo bufo* (SPI): two records within 1 - 2km at Marsh Barton Estate and West Exe College;
- Birds – Red-listed species within 2km comprise fieldfare *Turdus pilaris*, grey wagtail *Motacilla cinerea*, hawfinch *Coccothraustes coccothraustes*, herring gull *Larus argentatus*, house sparrow *Passer domesticus*, lapwing *Vanellus vanellus*, mistle thrush *Turdus viscivorus*, redwing *Turdus iliacus*, skylark *Alauda arvensis*, song thrush *Turdus philomelos*, spotted flycatcher *Muscicapa striata*, starling *Sturnus vulgaris*, white-fronted goose *Anser albifrons*, black-tailed godwit *Limosa limosa*, yellow wagtail *Motacilla flava* and yellowhammer *Emberiza citronella*;
- Birds – Amber-listed species which could be present on Site include kingfisher *Alcedo atthis*, dunnock *Prunella modularis*, swift *Apus apus*, house martin *Delichon urbicum*, willow warbler *Phylloscopus trochilus*, common bullfinch *Pyrrhula pyrrhula* and tawny owl *Strix aluco*;
- Barn owl *Tyto alba* (WCA): 1 record in 2011, 1km north-east;
- Inverebrates: 31 records covering a range of species. SPI species within 2km include garden tiger *Arctia caja*, hornet robberfly *Asilus crabroniformis*, small heath *Coenonympha pamphilus*, galium carpet *Epirrhoe galiata*, lackey *Malacosoma neustria*, shoulder-striped wainscot *Mythimna comma*, white ermine *Spilosoma lubricipeda*, buff ermine *Spilosoma luteum,* brown hairstreak *Thecla betulae*, blood-vein *Timandra comae* and sallow *Xanthia icteritia.*

Appendix 4 – Extended Phase 1 Habitat Survey and Hedgerow Assessment

Method

A site walkover was undertaken in accordance with the Joint Nature Conservation Committee's Phase 1 Habitat Survey methodology (JNCC 2010) on 22 June 2018 by Faye Midmore BSc MSc MCIEEM when weather conditions were dry with good visibility.

All habitats within the Site were identified, described and mapped during the field survey, and an indicative botanical species list compiled. Plant names follow Stace (2010). The survey was extended to highlight the potential presence of protected and priority species in accordance with CIEEM's Guidelines for Preliminary Ecological Appraisal (2017). This involved a search to identify the presence or potential presence of notable and protected species such as breeding birds, badger, dormouse, bats, riparian mammals (otter and water vole), reptiles and amphibians. Target Notes (TNs) were used to record any features or habitats of ecological interest.

All hedgerows were assessed under the wildlife and landscape criteria of the Hedgerow Regulations 1997. This involved recording woody species, woodland flora and associated features for the central 30m stretch of each 100m length of hedgerow in accordance with the Regulations. The information was then used to assess whether the hedgerow was 'Important' under the Regulations.

Where access allowed, adjacent habitats were also considered in order to assess possible impacts of the proposal in a wider context.

A digital map was produced using MapInfo Professional (Pitney Bowes, version 12.0.3). The Phase 1 Habitat map is shown in **Figure 1**. A plant species list is provided below.

Results

Desk study

Table 4.1 summarises the desk study records for notable plants returned by DBRC. Most of these plants are aquatic plants recorded within nearby County Wildlife Sites such as Exeter Canal. None of these species were identified during the walkover, although the woodland and northern hedgebank may support Devon BAP species primrose *Primula vulgaris*.

Table 4.1: Notable plant records provided by DBRC

Species	Conservation Status
Canadian Pondweed *Elodea canadensis,* Floating Pennywort *Hydrocotyle ranunculoides,* Indian Balsam *Impatiens glandulifera*, Japanese Knotweed *Fallopia japonica*, Parrot's Feather *Myriophyllum aquaticum*, Rhododendron *Rhododendron ponticum*	WCA 9
Fringed Water-Lily *Nymphoides peltata*	NS; DN1; DR
Early Meadow-Grass *Poa infirma*, Toothed Medick *Medicago polymorpha*	NS; DN1
Large-Flowered Mullein *Verbascum virgatum*	NS; DN2
Primrose *Primula vulgaris*	DBAP
Blunt-Leaved Pondweed *Potamogeton obtusifolius*, Shining Pondweed *Potamogeton lucens*, Sweet-flag *Acorus calamus*	DN1; DR
Bulrush *Schoenoplectus lacustris*, Fennel Pondweed *Potamogeton pectinatus*, Flowering Rush *Butomus umbellatus*, Common Club-rush *Schoenoplectus lacustris*, Cypress Spurge *Euphorbia cyparissias*, Greater Duckweed *Spirodela polyrhiza*, Hornwort *Ceratophyllum demersum*, Hound's-Tongue *Cynoglossum officinale*, Nodding Bur-Marigold *Bidens cernua*, Nuttall's Water-Weed *Elodea nuttallii*, Perfoliate Pondweed *Potamogeton perfoliatus*, Spiked Water-Milfoil *Myriophyllum spicatum*	DN1
Blue Fleabane *Erigeron acer*, Curled Pondweed *Potamogeton crispus*, Great Pond-Sedge *Carex riparia*, Great Water Dock *Rumex hydrolapathum*, Greater Pond-sedge *Carex riparia*, Rat's-Tail Fescue *Vulpia myuros*, River Water-Crowfoot *Ranunculus fluitans*, Water Speedwell *Veronica anagallis-aquatica*	DN2
Common Water-Crowfoot *Ranunculus aquatilis*, Corky-Fruited Water-Dropwort *Oenanthe pimpinelloides*	DN3

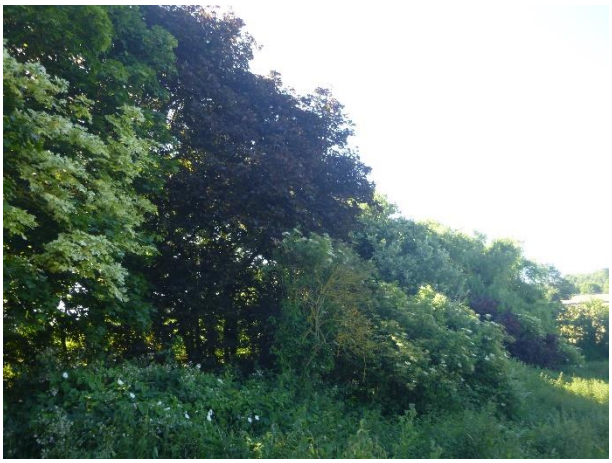
Sch9 = Invasive non-native plant listed on Schedule 9 of Wildlife & Countryside Act 1981 (as amended); **NS** = Nationally Scarce, occurring in 16 – 100 hectads in the UK; **DR** = Devon Rarity: native species recorded from 3 or fewer localities within Devon; **DN1** = Devon Notable 1: 1-25 2km squares in Atlas of Devon Flora 1984; **DN2** = Devon Notable 2: 26-50 2km squares in Atlas of Devon Flora 1984; **DN3** = Devon Notable 3: Selected species recorded from over 50 2km squares in Atlas of Devon Flora 1984; **DBAP** = Devon Biodiversity Action Plan species: these have been identified as species of key conservation concern in Devon.

Habitat Descriptions

The Site comprised two sheep-grazed, sloping fields of poor semi-improved grassland, divided in the valley by the Matford Brook. The fields are bound by woodland, hedgerows and fencing. Photographs and brief descriptions are provided below, including a list of dominant vegetative species within each habitat.

Table 4.1: Habitat Summaries

Habitat Summary	Photograph
Both fields comprise semi-improved grassland which is intensively sheep grazed. The more northerly field had been topped at the time of survey. The grassland sward composition is similar throughout with frequent perennial rye grass, sweet vernal grass, Yorkshire fog and rough meadow-grass with occasional meadow foxtail, creeping bent, crested dogs-tail and soft brome. Herb species are infrequent and at low diversity, the most abundant being common dandelion, daisy and white clover with occasional to rare common mouse-ear, creeping buttercup, bulbous buttercup, meadow buttercup, yarrow and cut-leaved crane's bill.	
A strip of low-lying, damp grassland is located directly north of the watercourse. The sward comprises Yorkshire fog, floating sweet-grass, perennial rye-grass, cock's-foot, soft rush with creeping thistle, marsh thistle, curled dock, meadow buttercup, plus occasional common spike-rush, lesser spearwort, brooklime, cuckooflower and common sedge. Two mature hawthorns are located close to the northern edge of this section of grassland.	
Dense scrub dominated by goat willow is located in the north-eastern section of the Site, separating the northern field into two, south of the existing building complex. Other species include elm, hazel, hawthorn and apple. It appears to have originated from an outgrown hedgerow and is now approximately 10 – 15m wide and 5 - 8m tall. There is no ground flora, the understorey being heavily shaded and disturbed by livestock.	

Habitat Summary	Photograph
Matford Brook bisects the Site from east to west. It consists of a stream on average 0.5 – 2.5m wide with 0.5m high steep to vertical banks lined with mature trees and areas of dense shrubs including hawthorn, bramble, wild privet, oak, elder, alder, hazel and ash, in places overhanging and shading the stream. An over-mature sessile oak is present at the western end. The banks are grazed and support limited herbaceous vegetation, other than in less accessible areas where tall ruderal vegetation and herbs include hedge woundwort, nettle, great willowherb, common figwort, herb Robert and wild angelica. The water is approximately 0.5cm deep for the majority of the length and very clear, with a fine gravel substrate. Aquatic vegetation is limited to occasional fool's-water-cress.	
A small block of plantation woodland is located south of the existing houses and farm buildings. It comprises a mixture of mature species including Norway maple, whitebeam, sycamore, Norway spruce, ash, weeping willow and Lawson cypress. The understorey was limited to the edges and comprised elder and hazel. The ground flora included nettle, bramble, herb-Robert, figwort, creeping thistle, cleavers and false oat-grass.	
Broadleaved woodland occurs offsite, between the south-western boundary and the A30 dual-carriageway. Species include ash, field maple, hawthorn, sycamore, turkey oak and Scot's pine. A ditch is located just within the woodland, outside the fence boundary of the Site. Ground flora was limited due to the density of the woodland and heavily-shaded ground such as ivy, bramble, harts-tongue fern.	

Habitat Summary	Photograph
A veteran sessile oak is located in the southern field. High bat roost potential with numerous features.	
Eastern boundary, adjacent to Chudleigh Road formed by estate fencing and sections of species-poor hedgerow, bramble, gorse and occasional mature standard tree such as oak, ash and Turkey oak. The adjacent road verge supported semi-improved grassland of cock's-foot, sweet vernal grass, false-oat grass, Yorkshire fog with a range of herbs including black knapweed, hedge bedstraw, oxeye daisy, bird's-foot trefoil, yarrow and ragwort.	
North-eastern boundary hedgerow along Waybrook Lane comprising elm, pedunculate oak, blackthorn and field maple. The hedgerow is species-poor and approximately 2 – 2.5m high and 1.5m wide. An over-mature pedunculate oak is located towards the existing buildings.	

Habitat Summary	Photograph
Building complex in north-eastern corner surrounded by hard standing, bare ground, rubble/ debris and scattered scrub and trees.	

Plant Species List

Scientific name	Common name
Acer campestre	Field maple
Acer platanoides	Norway maple
Acer pseudoplatanus	Sycamore
Achillea millefolium	Yarrow
Agrostis stolonifera	Creeping Bent
Alnus glutinosa	Alder
Alopecurus pratensis	Meadow Foxtail
Angelica sylvestris	Wild Angelica
Apium nodiflorum	Fool's-water-cress
Arrhenatherum elatius	False Oat-grass
Aspenium scolopendrium	Hart’s-tongue fern
Bellis perennis	Daisy
Buddleja davidii	Butterfly-bush
Cardamine pratensis	Cuckooflower
Carex nigra	Common Sedge
Centaurea nigra	Common Knapweed
Cerastium fontanum	Common Mouse-ear
Chamaecyparis lawsoniana	Lawson’s cypress
Cirsium arvense	Creeping Thistle
Cirsium palustre	Marsh Thistle
Corylus avellana	Hazel
Crataegus monogyna	Hawthorn
Cynosurus cristatus	Crested Dog's-tail
Dactylis glomerata	Cock's-foot
Eleocharis palustris	Common Spike-rush
Epilobium hirsutum	Great Willowherb
Fagus sylvatica	Beech
Fraxinus excelsior	Ash
Galium aparine	Cleavers
Galium mollugo	Hedge Bedstraw

Geranium dissectum	Cut-leaved Crane's-bill
Geranium robertianum	Herb-Robert
Glyceria fluitans	Floating Sweet-grass
Hedera helix	Ivy
Holcus lanatus	Yorkshire-fog
Ilex aquifolium	Holly
Juncus effusus	Soft-rush
Leucanthemum vulgare	Oxeye Daisy
Ligustrum vulgare	Wild Privet
Lolium perenne	Perennial Rye-grass
Lotus corniculatus	Common Bird's-foot-trefoil
Malus sp.	Apple
Picea abies	Norway spruce
Poa trivialis	Rough Meadow-grass
Prunus spinosa	Blackthorn
Quercus cerris	Turkey Oak
Quercus petraea	Sessile Oak
Quercus robur	Pedunculate Oak
Ranunculus acris	Meadow Buttercup
Ranunculus bulbosus	Bulbous Buttercup
Ranunculus flammula	Lesser Spearwort
Ranunculus repens	Creeping Buttercup
Rosa sp.	Rose sp.
Rubus fruticosus agg.	Bramble
Rumex crispus	Curled Dock
Rumex sp.	Dock sp.
Salix babylonica	Weeping Willow
Salix caprea	Goat Willow
Sambucus nigra	Elder
Scrophularia nodosa	Common Figwort
Senecio jacobaea	Common Ragwort
Sorbus aria	Whitebeam
Stachys sylvatica	Hedge Woundwort
Taraxacum agg.	Dandelion Agg.
Trifolium repens	White Clover
Ulex europaeus	Gorse
Ulmus sp,	Elm
Urtica dioica	Common Nettle
Veronica beccabunga	Brooklime

Appendix 5 – Dormouse Survey

Methods

A dormouse *Muscardinus avellanarius* tube survey was undertaken in accordance with The Dormouse Conservation Handbook (Bright *et al*., 2006). 75 tubes were deployed on 05 July 2018 by Alex Maynard BSc (Hons) at approximately 20m intervals. Tubes were checked on 27 September 2018 by Declan Murphy BSc (Hons) MRes GradCIEEM (NE dormouse Level 1 survey licence 2018-36121-CLS-CLS); and on 29 November 2018 by Louise Woolley BSc (Hons) MCIEEM (NE dormouse Level 1 survey licence CLS02689).

A survey must score a minimum probability score of 20 to provide sufficient survey effort to determine presence/likely absence of the species on a given site (based on 50 tubes). A higher score is given where more tubes are used. **Table 5.1** details the months in which tubes were in-situ and the probability score.

Table 5.1: Index of probability of finding dormice present (based on best practice guidelines) and months nest tubes were present

Month	Index of Probability (Bright *et al*., 2006) for 50 tubes	Probability Score for Site
April	1	-
May	4	-
June	2	-
July	2	3
August	5	7.5
September	7	10.5
October	2	3
November	2	3
TOTAL SCORE		**27**

Results

DBRC provided two records of hazel dormouse within 2km of the Site, located in Shillingford Abbot, on the other side of the A30 dual-carriageway.

During the nest-tube survey, five dormouse nests were found. Two were located within the vegetated banks of the Matford Brook and three were found within the hedgerow along the north-western boundary (Waybrook Lane). Within 1km these areas are mainly connected to a network of hedgerows as well as woodland along the A30 corridor. It is possible that there is connectively to larger blocks of woodland to the south-west (e.g. Peamore Wood and Shillingford Plantation) via vegetation along Waybrook Lane.

Appendix 6 – Building and Tree Assessment for Roosting Bats

Methods

Buildings

The buildings (excluding the cottages and threshing barn) were assessed by Louise Woolley BSc MCIEEM Natural England Class 2 licensed surveyor (2015-11776-CLS-CLS) and Lexi Yates BSc MSc GradCIEEM on 3rd April 2019 for their bat roost potential in accordance with best practice methodology published by the Bat Conservation Trust (Collins 2016).

Buildings were inspected externally and internally using close focusing binoculars and high-powered torches and where appropriate. A search was made for features which could provide suitable roosting spaces for bats, including gaps beneath tiles and flashing, gaps around windows, door frames and pipe work and possible access under eaves, soffits and barge/ fascia boards. A systematic search was made for the presence of bats and evidence such as bat droppings. No access could be made to the upper floor of building B1 due to structural/ health and safety concerns raised by a structural engineer. The threshing barn (B3) and Waybrook Cottages were not surveyed due to being under the ownership of another party; other buildings indicated on the map provided were not present or in a state of severe disrepair and not suitable for roosting bats.

Trees

Trees were inspected from ground-level with the aid of binoculars for Potential Roost Features (PRFs) by Dominic Sheldon BSc (Hons) PgCert ACIEEM (NPTC Level 2 (CS38) Tree Climbing & Aerial Rescue, Natural England bat licence Class 2 2016-20473-CLS-CLS) and Adam Earl BSc (Hons) MArborA MCIEEM (Level 2 (CS38) Tree Climbing & Aerial Rescue NE bat licence Class 1 2015-10845-CLS-CLS), on 04 April 2019. Each tree was search for rot holes, hazard beams, cracks or splits, woodpecker holes, knot holes, man-made holes, cankers, gaps between overlapping stems/ branches, loose bark, dense ivy, epicormic growth and bat, bird or dormouse boxes. Signs indicating possible use by bats were also recorded such as bat droppings, odour, scratches, staining and audible sounds. Information collected about PRF's included a description, the height of the feature above ground level and the orientation of the feature in relation to the trunk.

Any tree identified as being of Moderate or High suitability to support roosting bats was subject to a more detailed inspection on the same day. PRFs were inspected internally to determine the size and extent of the feature's suitability and to search for any bats or bat evidence present at the time of the survey. An endoscope, torch and measuring device were used where appropriate. Trees and/ or individual features were reassigned categories where appropriate, as described below.

Assessment Categories

Buildings/ trees were prescribed a category based on their potential to support roosting bats as detailed in **Table 6.1.** Locations are shown in **Figure 1.**

Table 6.1: Bat Roost Potential (as detailed in Collins, 2016)

Suitability	Description of bat roosting potential (building)	Description of bat roosting potential (trees)
Negligible	The building is not considered suitable for bats	Negligible habitat feature/s likely to be used by roosting bats
Low	A structure with one or more potential roost sites that could be used on a sporadic or occasional basis for feeding or solitary day roosting	A tree with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation). A tree of sufficient size and age to contain PRFs but with none seen

		from the ground or features seen with only very limited roosting potential.
Moderate	A structure with one or more areas suitable for roosting due to the features size, shelter, protection, conditions and surrounding habitat that could be attractive to bats and potentially support maternity roosts	A tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).
High	A structure with many areas suitable for roosting with a large number of potential access points obviously suitable for use by larger numbers of bats on a more regular basis. These are normally sheltered locations, subject to low variation in temperature.	A tree with one or more potential roost sites that are obviously suitable for use by larger number of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.
Roost	Bats and/or evidence of bats found	Known or confirmed roost

DNA Analysis

Where bat species could not be identified during the survey, droppings were collected during the survey following the BCT bat dropping collection protocol (Collins 2016) and the locations of collection marked on a map. Dropping samples were then sent to SureScreen Scientifics for DNA analysis.

Remote Monitoring

A further survey using an Anabat Express automated bat detector was undertaken on 9th April 2019 for seven nights within Building B1 to determine whether bats were using during the day, or as a night-roost/ feeding perch only. The data was analysed using Analook W bat analysis software.

Results

Buildings

The Site contained seven farm buildings (B1 – B7) and a row of cottages of various construction and various ages predominantly block, cob and stone. The buildings are set in a largely rural but intensively managed landscape, close to the busy A30 dual-carriageway and the edge of Exeter.

Building B1 contained droppings indicative of greater horseshoe bat *Rhinolophus ferrumequinum*, lesser horseshoe bat *Rhinolophus hipposideros,* long-eared bat *Plecotus sp.* and pipistrelle bats *Pipistrellus sp..* DNA analysis undertaken on droppings from B1 confirmed presence of lesser horseshoe bats utilising the building. Remote monitoring suggested that the building was used by the above species for foraging and that they may be roosting within the building.

No direct evidence of bats was discovered within buildings B2, B4 and B5. However, due to the construction materials, state of repair and number of potential access points, buildings B2 and B5 were categorised as having **High** potential for roosting bats and B4 as having **Low** potential.

Building B6 contained evidence in the form of droppings indicative of long-eared bats.

Building B7 provided **negligible** potential to support roosting bats due to the construction of the building.

There was no evidence of birds within the buildings, although given their open nature they could support nesting in future.

Further details are provided in **Table 6.2** below.

Table 6.2: Buildings Inspection Results

Building number	Description	Bat evidence/ access points/ potential features	Photograph	Category (based on Collins 2016)
B1	External The building is a two-storey barn, c.200yrs of age, constructed of cob, stone and brick with wooden joists and lintels. Open apertures are present in the form of doorways along with open and broken windows. The roof is covered with slate and is unlined. Internal The building is of wooden construction of various ages and has an earthen floor. The cob and stone walls are exposed along with the partition wall within the barn being composed of wooden lathes and planks. No roof void is present. Two storeys are present in the eastern half of the building.	Access – Through windows, due to broken panes of glass and open doorway apoertures due to no door being present. Evidence - Roosting sites for greater horseshoe bats are present on the internal roofing structure to the west of the building. An aggregation of approximately 80 droppings with 50 being freshly deposited within the last month were located beneath the ridge beam. Approximately 30 scattered droppings indicative of long-eared bats were present within the western side of the building. Approximately 10 scattered droppings indicative of pipistrelle bats were found within the western side of the building. There are many crevices and gaps in the wall and timber structure that provide roosting opportunities for bats. Many gaps are present at the wall top. DNA analysis also found evidence of lesser horseshoe bat using the building.	 	Roost

Building number	Description	Bat evidence/ access points/ potential features	Photograph	Category (based on Collins 2016)
B2	External A two-storey, open-fronted barn with a lean-to addition to the west of the building constructed of corrugated metal sheeting. The roof is of corrugated sheeting with no loft void present. Internal The building is of wooden construction of various ages and has an earthen floor. The cob and stone walls are exposed.	Access - Open access is available to bats throughout this barn. Potential features The building materials and design used in the construction of the building offer potential roosting features for a range of crevice dwelling species. The state of disrepair provides multiple opportunities for roosting bats. The lean-to provides roosting opportunities. It is covered in ivy and vegetation and has an earthern floor (see photo overleaf).	 	High

Building number	Description	Bat evidence/ access points/ potential features	Photograph	Category (based on Collins 2016)
				
B3	Threshing barn – no access.	N/A	N/A	N/A – no access.
B4	External A single-storey, open fronted barn with no roof void. It is constructed of wood with a sheet metal roof. Internal The building is of wooden construction with stone walls.	Access Open access is available to bats throughout this barn. Potential Features The building materials and design used in the construction of the building offer few roosting features for crevice dwelling species along with no sheltered areas provided for void dwelling species		Low

Building number	Description	Bat evidence/ access points/ potential features	Photograph	Category (based on Collins 2016)
B5	External The building is single-storey, constructed of cob, stone, brick and block. It has a small double pitch roof made of corrugated sheet metal and slate in a state of disrepair. Internal The construction of the building inside is of bare material and contains various items of farm equipment.	Access Access is present at the southern side of the building. Potential Features The building materials and design used in the construction of the building offer potential roosting features for a range of crevice dwelling species. The state of disrepair provides multiple opportunities for roosting bats.		High
B6	External The building is single-storey, comprises three garages and is of concrete block construction which is rendered with a corrugated sheet metal roof. Wooden fascia surrounds the single pitch roof. Internal The construction of the building inside is of bare materials with no roof void.	Access Acccess is available at present through the open garage doors. Access through from each garage is possible at the wall tops. Evidence Two droppings indicative of long-eared bats were present on the dividing wall of the northern garage.		Roost

Building number	Description	Bat evidence/ access points/ potential features	Photograph	Category (based on Collins 2016)
B7	External A single-storey barn constructed of corrugated sheet metal with a timber frame. The northern side was constructed from a cob wall. Internal The construction of the building inside is of bare materials with no roof void.	Access Access is available around the doors and under the metal sheeting. Potential Features The building materials and design used in the construction of the building offer negligible roosting features for crevice dwelling species. There are no sheltered areas provided for void dwelling species.		Negligable
Waybrook Cottages	To be developed by others – no access.	N/A	N/A	N/A – no access.

Tree Assessment

Two trees were identified which contained features with bat roost potential both of which were oak trees, located in the southern field (T1) and along the northern boundary (T2).

Tree T1 supported a vertical split on a limb at 6m on the southern aspect and a horizontal split on a limb at 4m on the northern aspect. Tree T2 supported two vertical splits on two limbs at 17m and a rot hole on a dead limb end at 10m on the southern aspect.

The features above were aerially inspected and found not to be suitable for roosting bats. The features did not lead to cavities of sufficient size or depth to be utilised by roosting bats.