REDROW HOMES

ECOLOGYSOLUTIONS

Part of the ES Group

GREAT WILSEY PARK, HAVERHILL: HV CABLE DIVERSION RESERVED MATTERS APPLICATION

Biodiversity Monitoring Strategy

Pursuant to Condition 45 of DC/15/2151/OUT

January 2020
8110.BMS(HV).vf

ecology solutions for planners and developers

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1. INTRODUCTION

1.1. Ecology Solutions was commissioned by Redrow Homes in October 2018 to prepare materials to address the requirements of planning conditions for the development at Great Wilsey Park as shown on Plans ECO1 and ECO2 (reference: DC/15/2151/OUT).

1.2. Condition 45 requires that a Biodiversity Monitoring Strategy (BMS) be submitted and approved prior to commencement of development. The condition states:

Within any phase or reserved matters application, no development shall take place (including demolition, archaeological investigation, ground works and vegetation clearance), until a biodiversity monitoring strategy for that phase has been submitted to, and approved in writing by, the local planning authority. The purpose of the strategy shall be to monitor existing and new habitats on the site including hedges, attenuation ponds and adjacent areas, and protected and priority species mitigation including [redacted], hazel dormice, reptiles and [redacted] The content of the Strategy shall include the following:

a) Aims and objectives of monitoring to match the stated purpose.
b) Identification of adequate baseline conditions prior to the start of development as appropriate.
c) Appropriate success criteria, thresholds, triggers and targets against which the effectiveness of the various conservation measures being monitored can be judged.
d) Methods for data gathering and analysis.
e) Location of monitoring.
f) Timing and duration of monitoring.
g) Responsible persons and lines of communication.
h) Review, and where appropriate, publication of results and outcomes.

A report describing the results of monitoring shall be submitted to the local planning authority at intervals identified in the strategy. The report shall also set out (where the results from monitoring show that conservation aims and objectives are not being met) how contingencies and/or remedial action will be identified, agreed with the local planning authority, and then implemented so that the development still delivers the fully functioning biodiversity objectives of the originally approved scheme. The monitoring strategy will be implemented in accordance with the approved details.

Reason: Monitoring is required at the appropriate time to ensure that that the proposed development delivers the fully functioning biodiversity outcomes set out in the Environmental Statement.

1.3. This document forms part of a Reserved Matters Application (RMA) for the undergrounding of a HV Cable and additional green and blue infrastructure associated with the Redrow scheme. This is hereafter referred to as the 'HV Cable Diversion RMA'. This term is also used in this document to refer to the land subject to this RMA.

1.4. The stated purpose of the strategy is *"to monitor existing and new habitats on the site including hedges, attenuation ponds and adjacent areas, and protected and priority species mitigation including [redacted], hazel dormice, reptiles and [redacted]* This has been interpreted to extend to all existing and proposed habitats, and protected and priority species for which mitigation and enhancement measures are proposed. While the named features and species are referenced, the monitoring strategy is not limited to them.

1.5. Extensive landscaping and green infrastructure are to be established as part of the main Infrastructure RMA (hereafter simply 'Infrastructure RMA'), with the majority of the monitoring required being undertaken across these areas. A separate BMS has been submitted to support the infrastructure application.

1.6. The scope of monitoring required for the HV Cable Diversion RMA is more limited than that required for the main infrastructure application given the pre-development status of the habitats and scale of the area. Notwithstanding these points, a scheme of ecological enhancement has been devised which, in conjunction with the landscape strategy, will deliver wildlife gains in the long term. It is the purpose of this Biodiversity Monitoring Strategy to assess the successful establishment and effectiveness of these measures.

1.7. Where appropriate, monitoring work will be undertaken in concert with that proposed for the Infrastructure RMA.

2. WOODLAND

2.1. Monitoring Objectives

To assess effectiveness of habitat establishment and management.

To use the findings to guide remedial action where appropriate.

2.2. Baseline Conditions

2.2.1. The woodland edge to the south of the HV Cable Diversion RMA comprises mature broad-leaved specimens. The existing footpath that passes through the woodland will be improved as part of the development. New woodland buffer planting will take place along the northern and eastern boundaries of the RMA. Long term management will encourage growth of native species and diversification of the habitat.

2.3. Success Criteria and Targets

1. All new woodland and scrub established and sustainable.
2. Dead wood piles established and undisturbed.
3. Observed use of new and existing features by wildlife.

2.4. Methods for Data Gathering and Analysis

2.4.1. Existing and newly established woodland within the HV Cable Diversion RMA will be subject to an annual walkover survey in concert with that proposed for the Infrastructure RMA. The success or otherwise of habitat establishment and management will be noted. Areas where trees have failed to establish successfully or where management is not proving effective will be recorded.

2.4.2. The walkover survey will be the responsibility of the management company, with input from the project ecologist and landscape architect as necessary.

2.4.3. Species monitoring to be undertaken as set out in the following sections will establish to what extent existing and new woodland are being used by wildlife.

2.5. Location of Monitoring

2.5.1. Monitoring will take place across the retained woodland to the south of the HV Cable Diversion RMA and the newly established woodland buffer planting to the northern and eastern boundaries.

2.6. Timing and Duration

2.6.1. A walkover survey of all habitats will be undertaken on an annual basis by the management company. This will be an ongoing commitment that will extend beyond the lifetime of this strategy.

2.7. Contingencies and Remedial Action

2.7.1. Any habitats failing to establish will be subject to attention by the management company.

2.7.2. Watering will be required during periods of drought to ensure satisfactory establishment. Watering will be undertaken as required to maintain healthy plant growth.

2.7.3. Dead or diseased plants will be removed and replaced with the same species during the next growing season (i.e. October to March inclusive).

2.7.4. All remedial action will be the responsibility of the management company.

3. HEDGEROWS AND TREES

3.1. Monitoring Objectives

To assess effectiveness of habitat establishment and management.

To use the findings to guide remedial action where appropriate.

3.2. Baseline Conditions

3.2.1. The existing hedgerow network is a key green infrastructure asset and is to be retained and enhanced wherever possible. Hedgerow H14 is very gappy, with large sections to the eastern end missing completely. A small section (approximately 16 metres) of Hedgerow H14 will be removed to allow access into housing plot A5, as agreed at the outline stage of the development and shown on the Hedgerow Removal Plan 5055-L-112 rev C. The remainder of the hedgerow will be gapped up and replanted where sections are missing. Hedgerow H17 is complete and well structured and will not be affected by the proposals.

3.2.2. Unless otherwise stated on the Hedgerow Removal Plan 5055-L-112 rev C accompanying the outline application, new gaps established will generally be a maximum of 12m to allow for Dormouse dispersal. Gaps in existing hedgerows will be reinforced with native species.

3.2.3. Hedgerows will continue to be managed, with the aim to ensure continued good structure. Hedgerows will be cut on rotation, so that not all are cut in any one year. This will encourage greater availability of winter forage for birds. Hedgerows will be laid on rotation to encourage greater structural diversity.

3.2.4. A scheme of new tree and shrub planting is to be undertaken throughout the green infrastructure as shown on the landscape proposals.

3.2.5. Existing trees outwith woodlands will be retained and safeguarded.

3.3. Success Criteria and Targets

1. All new hedgerows established and sustainable.
2. All existing hedgerows successfully laid in rotation and sustainable.
3. All new trees and shrubs established.
4. Observed use of new and existing features by wildlife.

3.4. Methods for Data Gathering and Analysis

3.4.1. Existing and newly established habitats within the HV Cable Diversion RMA will be subject to an annual walkover survey in concert with that proposed for the Infrastructure RMA. The success or otherwise of habitat establishment and management will be noted. Areas where hedgerows or

individual trees or shrubs have failed to establish successfully or where management is not proving effective will be recorded.

3.4.2. The walkover survey will be the responsibility of the management company, with input from the project ecologist and landscape architect as necessary.

3.4.3. Species monitoring to be undertaken as set out in the following sections will establish to what extent existing and new hedgerows and trees are being used by wildlife.

3.5. Location of Monitoring

3.5.1. Monitoring will take place across the retained and newly established hedgerows, trees and shrubs within the HV Cable Diversion RMA.

3.6. Timing and Duration

3.6.1. A walkover survey of all habitats will be undertaken on an annual basis by the management company. This will be an ongoing commitment that will extend beyond the lifetime of this strategy.

3.7. Contingencies and Remedial Action

3.7.1. Any habitats failing to establish will be subject to attention by the management company.

3.7.2. Watering will be required during periods of drought to ensure satisfactory establishment. Watering will be undertaken as required to maintain healthy plant growth.

3.7.3. Dead or diseased plants will be removed and replaced with the same species during the next growing season (i.e. October to March inclusive).

3.7.4. All remedial action will be the responsibility of the management company.

4. GRASSLAND

4.1. Monitoring Objectives

To assess effectiveness of habitat establishment.

To use the findings to guide remedial action where appropriate.

4.2. Baseline Conditions

4.2.1. The existing field margins are recognised to be of relatively higher botanical interest. These are to be retained and subject to ongoing management to maximise their botanical interest wherever possible. The field margin to the north of Hedgerow H14 will need to be removed to facilitate a new ditch and road access.

4.2.2. New areas of wildflower grassland are to be established to the south of the HV Cable Diversion RMA. These areas are currently principally intensive arable and field margins respectively. In conjunction with the drainage strategy, areas of dry and wet grassland will be established.

4.3. Success Criteria and Targets

1. All new grassland areas established and sustainable.
2. Botanical interest of existing field margins retained.
3. Observed use of new and existing features by wildlife.

4.4. Methods for Data Gathering and Analysis

4.4.1. Existing and newly established grassland within the HV Cable Diversion RMA will be subject to an annual walkover survey in concert with that proposed for the Infrastructure RMA. The success or otherwise of habitat establishment and management will be noted. Areas where the habitats have failed to establish successfully or where management is not proving effective will be recorded.

4.4.2. The walkover survey will be the responsibility of the management company, with input from the project ecologist and landscape architect as necessary.

4.4.3. Species monitoring to be undertaken as set out in the following sections will establish to what extent existing and new grassland habitats are being used by wildlife.

4.5. Location of Monitoring

4.5.1. Monitoring will take place across the retained and newly established grassland areas within the HV Cable Diversion RMA.

4.6. Timing and Duration

4.6.1. A walkover survey of all habitats will be undertaken on an annual basis by the management company. This will be an ongoing commitment that will extend beyond the lifetime of this strategy.

4.7. Contingencies and Remedial Action

4.7.1. Any habitats failing to establish will be subject to attention by the management company.

4.7.2. Watering will be required during periods of drought to ensure satisfactory establishment. Watering will be undertaken as required to maintain healthy plant growth.

4.7.3. Should new grassland habitats not establish appropriately the landscape contractor will address the matter through examining ground conditions and re-sowing as necessary.

4.7.4. All remedial action will be the responsibility of the management company.

5. ATTENUATION FEATURES

5.1. Monitoring Objectives

To assess effectiveness of habitat establishment.

To use the findings to guide remedial action where appropriate.

5.2. Baseline Conditions

5.2.1. The attenuation features of the HV Cable Diversion RMA as proposed comprise a combination of existing and new drainage ditches and a new attenuation basin. The existing drainage ditches are largely dry most of the time, and are associated with hedgerows and consequently generally overshaded.

5.2.2. For the most part the new and enhanced existing features will not be permanently wet, but some areas will be designed to retain water. The design of the attenuation basin includes small ponds designed to hold water, and a variety of shallow scrapes and channels, as well as embayments and spits. This diversity of slopes and banks offering varying water depths and retention will create a variety of micro-habitats for wildlife.

5.2.3. This will diversify the habitats present. Locally native aquatic and emergent species will be planted to encourage early naturalisation.

5.2.4. Newly established basins will be seeded with a native damp grassland species mix and managed appropriately.

5.2.5. Wetter areas will be planted with marginal species.

5.3. Success Criteria and Targets

1. Damp and dry grassland established and sustainable.
2. Marginal vegetation established and sustainable.
3. Observed use of new and existing features by wildlife.

5.4. Methods for Data Gathering and Analysis

5.4.1. Existing and newly established habitats will be subject to an annual walkover survey. The success or otherwise of habitat establishment and management will be noted. Areas where the habitats have failed to establish successfully or where management is not proving effective will be recorded.

5.4.2. The walkover survey will be the responsibility of the management company, with input from the project ecologist and landscape architect as necessary.

5.4.3. Species monitoring to be undertaken as set out in the following sections will establish to what extent existing and new attenuation features are being used by wildlife.

5.5. Location of Monitoring

5.5.1. Monitoring will take place across the retained and newly established attenuation features within the HV Cable Diversion RMA.

5.6. Timing and Duration

5.6.1. A walkover survey of all habitats will be undertaken on an annual basis by the management company. This will be an ongoing commitment that will extend beyond the lifetime of this strategy.

5.7. Contingencies and Remedial Action

5.7.1. Any habitats failing to establish will be subject to attention by the management company.

5.7.2. Watering will be required during periods of drought to ensure satisfactory establishment. Watering will be undertaken as required to maintain healthy plant growth.

5.7.3. Should new habitats not establish appropriately the landscape contractor will address the matter through examining ground conditions and re-sowing as necessary.

5.7.4. All remedial action will be the responsibility of the management company.

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7. BATS

7.1. Monitoring Objectives

To assess changes in bat activity following establishment of new landscaping, infrastructure and public access.

To monitor status of known existing bat roosts.

To monitor use of new bat boxes.

To use the findings to guide remedial action where appropriate.

7.2. Baseline Conditions

7.2.1. Bat activity surveys completed in October 2018 and April to October 2019 across the Redrow site recorded a generally low level of activity. Areas shown to be of greater interest for bats are Great Field Plantation and Hedgerow H4, crossing the south of the site. Species recorded during the activity surveys include Common Pipistrelle *Pipistrellus pipistrellus*, Soprano Pipistrelle *Pipistrellus pygmaeus*, Noctule Bat *Nyctalus noctula*, Brown Long-eared Bat *Plecotus auritus* and Barbastelle *Barbastella barbastellus*. The results of the activity surveys completed to inform the ES in 2014 and 2015 across the wider site recorded a similar assemblage.

7.2.2. Several trees with potential roost features were identified by in 2014, three of which were found to contain roosts. A single Pipistrelle species hibernation roost was identified within tree T28. Trees T44 and T49 were identified as having bat roosts but the species were not identified from eDNA testing. Nocturnal surveys concluded that T49 was used as a roost by Soprano Pipistrelle. No emergence was recorded from any location during surveys undertaken in September 2019.

7.2.3. The 2018/19 dataset, combined with the information from the outline ES, provides a robust baseline from which to assess the effectiveness of mitigation and enhancement measures. As far as possible, future monitoring surveys will replicate the approach taken for the 2018/19 work.

7.3. Success Criteria and Targets

1. Existing bat species diversity maintained.
2. No significant decline in bat activity levels.
3. Continued use of known existing roosts.
4. Recorded use of new bat boxes.

7.4. Methods for Data Gathering and Analysis

7.4.1. A series of transect surveys and static detector deployments will be undertaken, following the established procedures of the outline ES and the updated surveys undertaken by Ecology Solutions in 2018 / 2019.

7.4.2. Field surveys will be undertaken with regard to best practice guidelines issued by Natural England (2004[1]), the Joint Nature Conservation Committee (2004[2]) and the Bat Conservation Trust (2016[3]).

7.4.3. Monthly surveys will be completed from April to October in odd years during the operation of this strategy, i.e. Years 1, 3 and 5 following completion of the landscaping works and ecological enhancements associated with the HV Cable and Infrastructure RMAs.

Activity Transects

7.4.4. Activity surveys will be undertaken across a set route which covers the majority of the Infrastructure RMA as well as landscaped areas associated with the HV Cable Diversion RMA. This will include the designated dark corridors as defined in the *Lighting Strategy for Bats* produced under Condition 44 for the Infrastructure RMA and, as far as possible, replicate the transect routes for Ecology Solutions' updated surveys in 2018/19 (see Plan ECO3).

7.4.5. The transects will commence at sunset and continue for two to three hours in order to maximise the encounter rate of bats i.e. both early and late emerging species. The echolocation calls of bats will be recorded on iPads paired with Echo Meter Touch 2 Pro bat detectors and analysed using Kaleidoscope software (or equivalent equipment and software).

7.4.6. The surveyors will observe the behaviour of any bat recorded, i.e. foraging or commuting, together with noting the species present and number of bats present at that location.

7.4.7. Surveys will be conducted when the night-time temperature are above 10°C. The insectivorous diet of bats means there is little or no food available when temperature falls below this level and consequently levels of activity are low and may not accurately reflect the value of the site for bats. The weather conditions for the surveys will be recorded and any limitations noted.

Static Detector Deployments

7.4.8. Static bat detectors (SM4BAT or equivalent) will be deployed in the locations shown on Plan ECO3, i.e. the locations in which detectors were deployed for Ecology Solutions' updated surveys in 2018/19, as far as is reasonable possible given security considerations. This will allow for more or less direct comparison between activity levels from before and after completion of building works. Detectors will be deployed for a minimum of five nights per month between April and October inclusive. Accumulated data will be analysed using Kaleidoscope (or equivalent).

[1] Mitchell-Jones, A. J. (2004). *Bat Mitigation Guidelines*. English Nature, Peterborough.
[2] Mitchell-Jones, A.J. & McLeish, A.P. (Eds.) (2004). *Bat Workers' Manual*. 3rd edition. Joint Nature Conservation Committee, Peterborough.
[3] Collins, J. (2016). *Bat Surveys for Professional Ecologists: Good Practice Guidelines*. 3rd Edition. The Bat Conservation Trust, London.

Emergence Surveys

7.4.9. Emergence surveys of existing known bat roosts will be undertaken on three occasions during the period from May to August / September inclusive. Trees will be observed from fifteen minutes before sunset until two hours after sunset. Surveyors will use iPads paired with Echo Meter Touch 2 Pro bat detectors to record data, which will again be analysed using Kaleidoscope or equivalent. Records of bats emerging will be compared to the baseline data.

7.4.10. Where considered appropriate or useful, and where safe to do so, bat workers holding the necessary tree climbing qualifications will assess use of particular features.

Bat Boxes

7.4.11. Bat boxes will be checked by a licensed bat worker using a ladder in August annually for five years. Species and numbers present will be recorded. Where droppings are present these will be sent for DNA analysis if necessary. Each box will be numbered to allow accurate recording of data and comparison between years. A further check will be undertaken in March each year to ensure the boxes remain undamaged.

7.5. Location of Monitoring

7.5.1. Monitoring will take place across the retained and newly created habitats within the HV Cable Diversion RMA.

7.6. Timing and Duration

7.6.1. Monitoring surveys will be completed monthly from April to October in Years 1, 3 and 5 following completion of the landscaping works associated with the HV Cable and Infrastructure RMAs.

7.6.2. Bat boxes will be checked in August annually for signs of occupation by bats. These checks will be undertaken for the lifetime of this strategy (five years).

7.7. Contingencies and Remedial Action

7.7.1. Bat species diversity and activity levels will be monitored as set out above. Should significant changes be observed, such as loss of species or declines in activity, steps will be taken where possible to address potential contributing factors. The lighting strategy is considered to be robust, but if unexpected adverse effects are being experienced lighting units will be investigated and repaired, modified or replaced if necessary.

7.7.2. It is accepted and understood that bats will move on to new roosting opportunities, and so if existing roosts are not found to be occupied in every year this should not necessarily be taken as evidence of an adverse effect. Nonetheless, if no occupation is observed in consecutive years, possible reasons for this will be considered and appropriate measures taken.

7.7.3. If bat boxes are found to be damaged they will be replaced as soon as reasonably practicable.

7.7.4. It is understood that bat boxes can take time to be found and used. If bat boxes are found to have no signs of use in the Year 2 check they will be relocated to a suitable tree under the supervision of a licensed bat worker.

8. OTTERS AND WATER VOLES

8.1. Monitoring Objectives

To monitor any use of the HV Cable Diversion RMA by Otters.

To monitor any use of the HV Cable Diversion RMA by Water Voles.

8.2. Baseline Conditions

8.2.1. The ditches within the HV Cable Diversion RMA remains dry most of the time and no evidence of Otters or Water Voles has been recorded.

8.2.2. These species are known to be present in the River Stour and the Stour Brook south of the site, and there is the potential for the ditches within this RMA to support them in the future.

8.3. Success Criteria and Targets

1. Recorded use of the HV Cable Diversion RMA by Otters.
2. Recorded use of the HV Cable Diversion RMA by Water Voles.

8.3.1. It is noted that no specific measures for Otters and Water Voles were defined the outline ES, simply that maintaining open watercourses could encourage their colonisation in time.

8.4. Methods for Data Gathering and Analysis

8.4.1. Otter surveys will be undertaken in Years 1, 3 and 5 following completion of the landscaping works associated with the HV Cable and Infrastructure RMAs and in concert with that proposed for the Infrastructure RMA. Surveys for Otters can be undertaken at any time of year, but generally this work will be undertaken in concert with that for Water Voles (see below). A suitably qualified ecologist will survey watercourses to identify field signs:

- Spraint – Irregular, sometimes short, rounded segments containing fish bones, scales or crayfish parts;
- Footprints of Otters in soft substrates along the watercourse typically 8cm wide and 10cm long;
- Holts and couches on the banks of the watercourse; and
- Slides on the banks of the watercourse.

8.4.2. Surveys for Water Voles will be undertaken in Years 1, 3 and 5 following completion of the landscaping works associated with the HV Cable and Infrastructure RMAs, with surveys carried out from mid-April to the end of June and July to September inclusive.

8.4.3. As Water Voles are rarely seen, the surveys will be based around the identification of characteristic signs. The surveys will follow guidance by Natural England and consist of a close examination of all watercourses, waterbodies and banks up to two metres from the water's edge.

8.4.4. The following signs will be sought:

- Faeces: 8-12 mm long and 4-5 mm wide with blunt ends;
- Latrines: Water Voles will deposit the majority of their droppings at points of their territory boundary;
- Feeding Stations: Water Voles often bring pieces of cut vegetation to favoured feeding stations close to the water's edge;
- Burrows: Typically 4-8 cm in diameter and found in the river / ditch bank;
- Footprints of Water Vole in soft substrates along the ditch; and
- Water Voles that may be observed directly.

8.4.5. The condition of newly established and existing habitats will be monitored.

8.5. Location of Monitoring

8.5.1. Monitoring will take place across the retained and newly established waterbodies, and associated habitats within the HV Cable Diversion RMA.

8.6. Timing and Duration

8.6.1. Monitoring surveys for Otters and Water Voles will be undertaken in Years 1, 3 and 5 following completion of the landscaping works associated with the HV Cable and Infrastructure RMAs and in concert with that proposed for the Infrastructure RMA. Surveys for Water Voles will be carried out from mid-April to the end of June and July to September inclusive, with checks for Otters carried out at the same time.

8.7. Contingencies and Remedial Action

8.7.1. Otters and Water Voles are currently not present within the HV Cable Diversion RMA. Any signs of their presence would be viewed as a significant benefit of the scheme.

8.7.2. New planting will be replaced if damaged or failing, in the next available planting season.

9. DORMICE

9.1. Monitoring Objectives

To monitor any use of the HV Cable Diversion RMA by Dormice.

To monitor use of new Dormouse nest boxes.

To use the findings to guide remedial action where appropriate.

9.2. Baseline Conditions

9.2.1. No evidence of Dormice was recorded by Ecology Solutions within the HV Cable Diversion RMA with the majority of the site comprising arable field. Suitable habitats are limited to Hedgerow H14, which is gappy with large sections missing, Hedgerow H17 and the woodland edge.

9.2.2. A Dormouse nest was recorded in a survey tube along Hedgerow H13, west of Great Field Plantation during a survey undertaken in April 2019. No other evidence of Dormice has been recorded within the Redrow site. A partial Dormouse nest was recorded in the south-east of the wider site in 2015 during surveys to inform the outline ES.

9.3. Success Criteria and Targets

1. Recorded use of the HV Cable Diversion RMA by Dormice in nest tube surveys.
2. Recorded use of Dormouse boxes.
3. Establishment and maintenance of habitats to encourage Dormice.

9.4. Methods for Data Gathering and Analysis

9.4.1. Monitoring surveys for Dormice will be undertaken in Years 1, 3 and 5 following completion of the landscaping works associated with the HV Cable and Infrastructure RMAs and in concert with that proposed for the Infrastructure RMA.

9.4.2. The survey technique involves the installation and checking of nest tubes and nest boxes within all habitats considered to be species-rich or of potential value to Dormice. The Dormouse nest tubes / boxes utilised will be those approved as standard by the Mammal Society.

9.4.3. Nest tubes / boxes will be placed in accordance with the guidance provided by the Mammal Society and Natural England. Typically, tubes are placed within scrub, hedgerows and woodland approximately every 20 metres where suitable locations can be identified. Nest boxes are placed at lower densities but in similarly selected locations as for nest tubes. The nest tubes will be attached with wire ties underneath suitably sturdy horizontal branches and positioned approximately 1.5 metres above ground level on average.

9.4.4. The survey will be scored for effort according to the method developed from the South West Dormouse Project and carried through in the second edition of *The Dormouse Conservation Handbook* (English Nature, 2006[4]), or the equivalent in guidelines prevailing at the time of survey. The system provides an overall score that reflects the chances of Dormice being discovered if present, and thus provides an indicator of the 'thoroughness' of a survey. This score is based on the number of tubes used and the number of months the tubes are in place.

9.4.5. The months of the year are weighted according to the likelihood of recording Dormice, as set out in Table 9.1 below.

Month	Weighting
April	1
May	4
June	2
July	2
August	5
September	7
October	2
November	2

Table 9.1. Monthly Score Weighting for Dormouse surveys.

9.4.6. Generally speaking, the index of effort is calculated based on the use of 50 nest tubes as a standard minimum.

9.4.7. A score of 20 (or above) is deemed a thorough survey and a score of 15 to 19 may be regarded as adequate where circumstances do not permit more time or more tubes (particularly if other survey methods have also given negative results).

9.4.8. Dormouse nest tubes will be collected following completion of each survey round. Nest boxes will remain in situ. The locations of nest boxes will be carefully considered to avoid interference by the public.

9.4.9. New and existing hedgerows, woodland and scrub will be checked and made good where necessary through new planting in the next planting season.

9.5. Location of Monitoring

9.5.1. Monitoring surveys will take place across suitable retained and newly created habitats within and adjacent to the HV Cable Diversion RMA, i.e. hedgerows, woodland and scrub.

9.6. Timing and Duration

9.6.1. Monitoring surveys will take place in Years 1, 3 and 5 following completion of the landscaping works associated with the HV Cable and Infrastructure

[4] English Nature (2006). *The Dormouse Conservation Handbook*. English Nature, Peterborough.

RMAs and in concert with that proposed for the Infrastructure RMA. Surveys will be undertaken from May to September inclusive to meet the threshold index of probability score.

9.6.2. Nesting boxes will be checked annually in March by a suitably experienced ecologist for the first five years following installation, to ensure that they are still in situ and are not damaged.

9.7. Contingencies and Remedial Action

9.7.1. Dormice are currently not present within the HV Cable Diversion RMA. Any signs of their presence would be viewed as a significant benefit of the scheme.

9.7.2. New planting will be replaced if damaged or failing, in the next available planting season.

9.7.3. If Dormouse boxes are found to be damaged, they will be replaced as soon as reasonably practicable. Regard will be had to possible interference from the public.

10. BIRDS

10.1. [redacted]. There will be no suitable breeding habitat within the HV Cable Diversion RMA post-development. New habitat will be created as part of the Infrastructure RMA.

10.2. **Monitoring Objectives**

To monitor use of the HV Cable Diversion RMA by priority species.
To monitor use of the HV Cable Diversion RMA by bird species in general.
To monitor use of bird boxes.
To use the findings to guide remedial action where appropriate.

10.3. **Baseline Conditions**

10.3.1. Four wintering bird surveys were completed by Ecology Solutions in November and December 2018, and in January and February 2019. A total of 47 species were recorded, including 17 species that are listed as NERC species of principal importance, Suffolk LBAP and / or on the UK Birds of Conservation Concern Red and Amber list, as set out below:

Song Thrush *Turdus philomelos*
[redacted]
Yellowhammer *Emberiza citrinella*
Kestrel *Falco tinnunculus*
Linnet *Carduelis cannabina*
Redwing *Turdus iliacus*
Stock Dove *Columba oenas*
Black-headed Gull *Chroicocephalus ridibundus*
Bullfinch *Pyrrhula pyrrhula*
Dunnock *Prunella modularis*
Mistle Thrush *Turdus viscivorus*
Starling *Sturnus vulgaris*
House Sparrow *Passer domesticus*
Reed Bunting *Emberiza schoeniclus*
Fieldfare *Turdus pilaris*
Mallard *Anas platyrhynchos*
Lesser Black-backed Gull *Larus fuscus*

10.3.2. [redacted]

10.3.3. Four wintering bird surveys were undertaken between November 2014 and February 2015 to inform the outline ES, recording a similar complement of species.

10.3.4. Three breeding bird surveys were undertaken by Ecology Solutions in April, May and June 2019.

10.3.5. Fifty species were recorded within or immediately adjacent to the site, including 18 species that are listed as NERC species of principal importance and / or on the UK Birds of Conservation Concern Red and Amber list, as follows:

Song Thrush *Turdus philomelos*
[redacted]
Yellowhammer *Emberiza citrinella*
Kestrel *Falco tinnunculus*
Linnet *Carduelis cannabina*
Herring Gull *Larus argentatus*
Stock Dove *Columba oenas*
Black-headed Gull *Chroicocephalus ridibundus*
Bullfinch *Pyrrhula pyrrhula*
Dunnock *Prunella modularis*
Mistle Thrush *Turdus viscivorus*
Starling *Sturnus vulgaris*
House Sparrow *Passer domesticus*
Reed Bunting *Emberiza schoeniclus*
Fieldfare *Turdus pilaris*
Willow Warbler *Phylloscopus trochilus*
Lesser Black-backed Gull *Larus fuscus*
Tawny Owl *Strix aluco*

10.3.6. Of these species, singing males of Dunnock, [redacted] Stock Dove and Yellowhammer were all recorded within the HV Cable Diversion RMA and are therefore categorised as possible breeders.

10.4. Success Criteria and Targets

1. Maintain existing species complement in breeding and wintering periods.
2. Occupation of bird boxes.

10.5. Methods for Data Gathering and Analysis

Breeding Birds

10.5.1. Three breeding bird surveys will be undertaken during suitable weather conditions between April and June in Years 1, 3 and 5 following completion of the landscaping works associated with the HV Cable and Infrastructure RMAs and in concert with that proposed for the Infrastructure RMA.

10.5.2. As far as is practicable, transects will follow the same route as used for the breeding bird surveys (see Plan ECO4), to allow for direct comparison.

10.5.3. All birds seen or heard within the survey area will be identified and recorded, as will their behaviour. Binoculars and a telescope will be used when necessary.

Wintering Birds

10.5.4. Four monthly wintering bird surveys will be undertaken between November and February in Years 1, 3 and 5 (or equivalent) following completion of the landscaping works associated with the HV Cable and Infrastructure RMAs. Again, the transect route will follow that used for the most recent surveys as far as practicable (see Plan ECO4).

10.5.5. The surveys will commence at or soon after sunrise and will be performed in suitable weather conditions.

10.6. Location of Monitoring

10.6.1. Monitoring will take place across the retained and newly created habitats within the HV Cable Diversion RMA. Transect routes will closely follow those used for the most recent surveys.

10.7. **Timing and Duration**

10.7.1. Monitoring will take place in Years 1, 3 and 5 following completion of the landscaping associated with the HV Cable and Infrastructure RMAs.

10.7.2. Bird boxes will be checked periodically (at least once a year in March) for the first five years following installation, by a suitably experienced ecologist to ensure that they are still in situ and are not damaged.

10.8. **Contingencies and Remedial Action**

10.8.1. Any damage to new planting will be made good through replacement during the next planting season.

10.8.2. If bird boxes are found to be damaged they will be replaced as soon as reasonably practicable.

11. REPTILES

11.1. Monitoring Objective

To assess changes in reptile population sizes and distribution.

To use the findings to guide remedial action where appropriate.

11.2. Baseline Conditions

11.2.1. The hedgerows, field margins and woodland edge associated with the HV Cable Diversion RMA provide suitable habitat for reptiles, and a small number of Common Lizard *Zootoca vivipara* were recorded to the north of Hedgerow H14 during presence / absence surveys undertaken from April to June 2019.

11.2.2. Grass Snake *Natrix helvetica* have also been recorded across the Redrow site as a whole during surveys undertaken in 2019.

11.3. Success Criteria and Targets

1. Maintain presence of Common Lizard in HV Cable Diversion RMA.
2. Increase population of Common Lizard in HV Cable Diversion RMA.
3. Record Grass Snake and Slow Worm within the HV Cable Diversion RMA.

11.4. Methods for Data Gathering and Analysis

11.4.1. Specific surveys for reptiles will be carried out in Years 1, 3 and 5 following completion of the landscaping works associated with the HV Cable and Infrastructure RMAs and in concert with that proposed for the Infrastructure RMA. Work will be undertaken between April and September inclusive. The methodology that will be utilised is principally derived from guidance given in Froglife Advice Sheet 10[5], the *Herpetofauna Workers' Manual*[6] and the Herpetofauna Groups of Britain and Ireland's (HGBI) advisory note[7].

11.4.2. Areas of suitable habitat will be surveyed for the presence of reptiles using artificial refugia ("tins"), 0.5m x 0.5m roofing felt tins will be placed within areas of suitable reptile habitat within parcels A1, A2 and A8.

11.4.3. The tins provide shelter and heat up more quickly than the surroundings in the morning and can remain warmer than the surroundings in the late afternoon. Being ectothermic (cold blooded), reptiles use them to bask under and raise their body temperature which allows them to forage earlier and later in the day.

[5] Froglife (1999) *Reptile Survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation*. Froglife Advice Sheet 10. Froglife, Halesworth.
[6] Gent, T and Gibson, S. (2003). *Herpetofauna Workers' Manual*. JNCC, Peterborough.
[7] Herpetofauna Groups of Britain and Ireland (HGBI). (1998). *Evaluating Local Mitigation / Translocation Programmes: Maintaining Best Practice and Lawful Standards*.

11.4.4. To determine presence / absence the tins will be checked for reptile activity over seven visits at appropriate times of the day (avoiding the middle of the day when the ambient air temperature is at its highest) in accordance with Natural England and other guidance. Optimum weather conditions for reptile surveying are temperatures between 10°C and 17°C, intermittent or hazy sunshine and little or no wind.

11.4.5. The status of new and existing grassland habitats will be checked on an annual basis for the five years covered by this strategy.

11.5. Location of Monitoring

11.5.1. Monitoring will take place across the retained and newly created habitats within the HV Cable Diversion RMA.

11.6. Timing and Duration

11.6.1. Monitoring surveys will be undertaken in Years 1, 3 and 5 following completion of the landscaping works associated with the HV Cable and Infrastructure RMAs.

11.7. Contingencies and Remedial Action

11.7.1. Should grassland habitats not establish appropriately the landscape contractor will address the matter through examining ground conditions and re-sowing as necessary.

12. AMPHIBIANS

12.1. Monitoring Objectives

To monitor any use of the HV Cable Diversion RMA by Great Crested Newts.

To monitor use of the HV Cable Diversion RMA by other amphibians.

12.2. Baseline Conditions

12.2.1. The hedgerows, field margins and woodland edge associated with the HV Cable Diversion RMA provide suitable terrestrial habitat for Great Crested Newts *Triturus cristatus* and other amphibians. There are no suitable aquatic habitats within the RMA.

12.2.2. No Great Crested Newts have been recorded within the Redrow site and there are no records for Great Crested Newts in the local area. Ponds within the site and those within 500m were subject to eDNA testing in 2019 where permission was granted. The results of the eDNA testing were returned as negative.

12.2.3. Common Toads *Bufo bufo* and Smooth Newts *Lissotriton vulgaris* were recorded during Great Crested Newt surveys completed in 2014 and 2015.

12.3. Success Criteria and Targets

1. Record Common Toads and Smooth Newts within the HV Cable Diversion RMA.
2. Record Great Crested Newts within the HV Cable Diversion RMA in sustainable numbers.

12.4. Methods for Data Gathering and Analysis

12.4.1. The main focus of the survey work will be undertaken within the Infrastructure RMA, with survey measures to include a single evening presence / absence survey of existing and newly established ponds during the peak Great Crested Newt survey season from mid-April to mid-May. Additionally, searches of the ditches and attenuation feature within the HV Cable Diversion RMA using high-powered torches would be completed.

12.5. Location of Monitoring

12.5.1. Monitoring will take place across the retained and newly created waterbodies within the HV Cable Diversion RMA.

12.6. Timing and Duration

12.6.1. Monitoring surveys will take place in Years 1, 3 and 5 following completion of the landscaping works and attenuation features associated with the HV Cable and Infrastructure RMAs and in concert with those proposed for the

Infrastructure RMA. The survey will be undertaken during the peak Great Crested Newt survey season of mid-April to mid-May.

12.7. **Contingencies and Remedial Action**

12.7.1. Any problems identified with water levels in the existing ditches will be discussed with the management company and steps taken where appropriate to maintain their status.

12.7.2. In general no further remedial actions for amphibians are likely to be necessary.

13. INVERTEBRATES

13.1. Monitoring Objectives

To check new invertebrate habitats for signs of use, and take remedial action as necessary.

13.2. Baseline Conditions

13.2.1. Given the habitats present, it is likely an assemblage of common invertebrate species utilise the HV Cable Diversion RMA, though the intensive arable management of the majority of the land within the RMA will limit variety. There is no evidence to suggest that any rare or notable species would currently be present.

13.3. Success Criteria and Targets

1. Maintain new invertebrate habitats.
2. Encourage greater invertebrate diversity.

13.4. Methods for Data Gathering and Analysis

13.4.1. Specific invertebrate survey work is not proposed, rather the focus of monitoring will be on qualitative observations of new and existing habitats, in terms of their use by invertebrates.

13.4.2. The status of new and existing habitats will be checked on an annual basis for the five years covered by this strategy and in concert with that proposed for the Infrastructure RMA.

13.5. Location of Monitoring

13.5.1. Monitoring will take place across the retained and newly created habitats within the HV Cable Diversion RMA.

13.6. Timing and Duration

13.6.1. New invertebrate nesting features will be monitored on at least an annual basis during other survey visits to the site.

13.6.2. Newly established and existing habitats will be monitored as previously described.

13.7. Contingencies and Remedial Action

13.7.1. Nesting features will be replaced or repaired as soon as reasonably practicable if found to be damaged. If damage persists then consideration will be given to relocating the feature to a less obvious location – this will be at the discretion of the project ecologist and the management company.

13.7.2. Should new wildflower grassland not establish appropriately the landscape contractor will address the matter through examining ground conditions and re-sowing as necessary.

14. RESPONSIBLE PERSONS AND COMMUNICATION

14.1. Redrow Homes has ultimate responsibility for implementation of this monitoring strategy. The individual currently leading for Redrow Homes is Richard Franks, Senior Engineering Manager, and the responsibility for implementation will be his or that of his appointed successor.

14.2. It is the responsibility of the appointed individual at Redrow Homes to instruct appropriate experienced ecologists and / or landscape contractors to check the status of the various existing and proposed habitats and features described in this report.

14.3. Clear channels between these parties and their associates on the ground will be in operation at all times, by email and telephone as appropriate.

14.4. Redrow and the landowner will establish a joint management company to manage and maintain the public landscape areas of Great Wilsey Park. The management company will be responsible for the ongoing maintenance of areas of soft landscaping within public open spaces, attenuation basins and Great Field Plantation.

15. REVIEW AND PUBLICATION OF RESULTS

15.1. An annual monitoring report will be produced for five years following completion of landscaping works associated with the HV Cable and Infrastructure RMAs. This will be delivered in November of each year.

15.2. The report will set out the findings of the monitoring work, which will be judged against the success criteria. Details of any remedial work undertaken will be set out, together with any revised objectives for the following year.

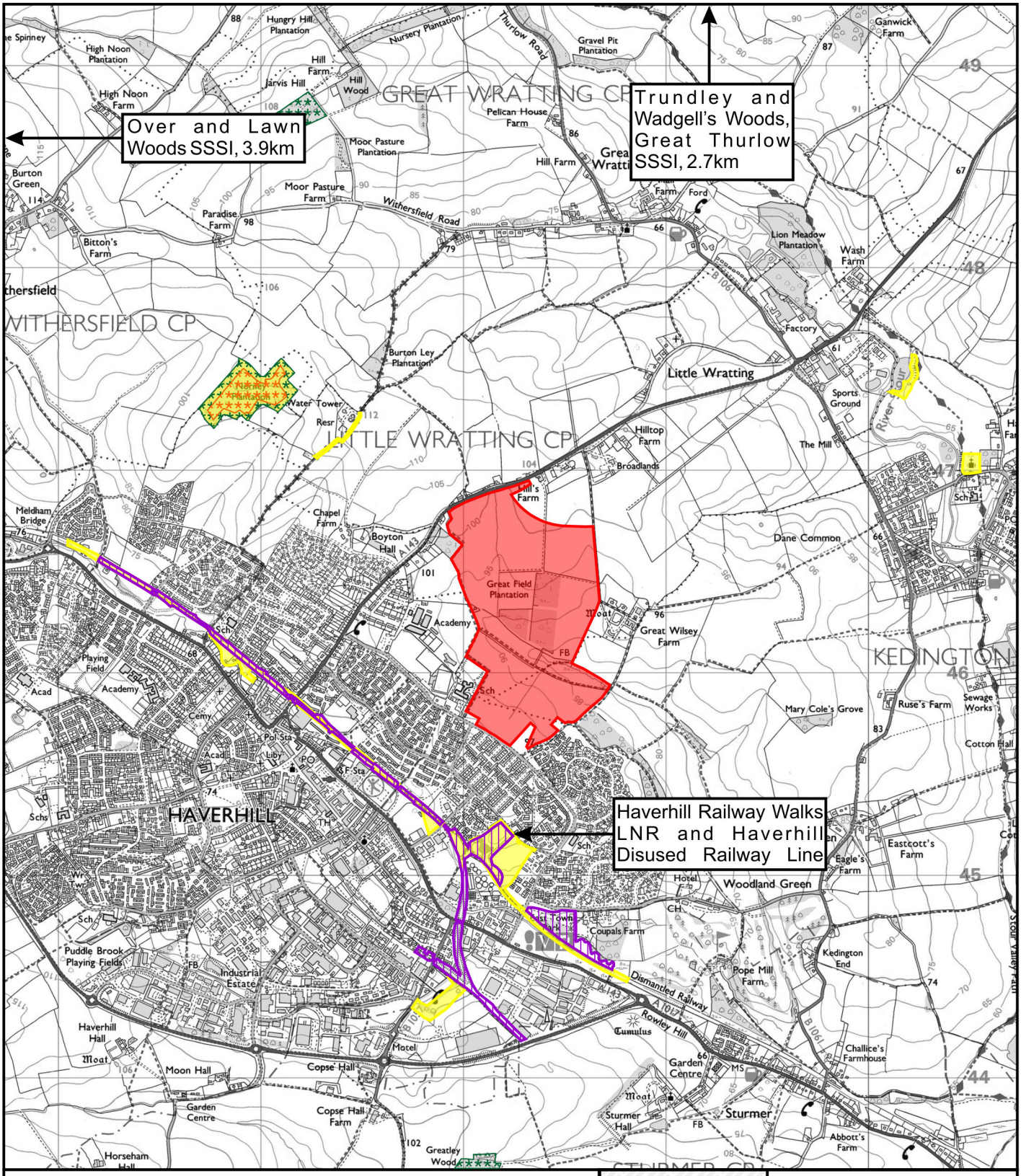
15.3. This Biodiversity Monitoring Strategy covers the first five years following completion of the landscaping and ecological enhancement works associated with the HV Cable Diversion RMA. Following submission of the Year 5 monitoring report, further discussion will be held with the Local Planning Authority to determine the need for further monitoring work.

15.4. This is intended to be an iterative document. Objectives and success criteria will be reviewed annually and amended if required following discussion and agreement with the Local Planning Authority.

PLANS

PLAN ECO1

Site Location and Ecological Designations



KEY:

- SITE LOCATION
- LOCAL NATURE RESERVE (LNR)
- COUNTY WILDLIFE SITE (CWS)
- ANCIENT WOODLAND
- ANCIENT REPLANTED WOODLAND

N

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8110: GREAT WILSEY PARK, HAVERHILL

PLAN ECO1: SITE LOCATION AND ECOLOGICAL DESIGNATIONS

Rev: A

Jul 2019

PLAN ECO2

Ecological Features

H11
H10
H14
H12
H13
H15
H9
H7
H17
H6
H5
H4

KEY:

- SITE BOUNDARY
- ARABLE LAND
- WOODLAND
- IMPROVED GRASSLAND
- DITCH
- STOUR BROOK TRIBUTARY
- POND
- HEDGEROW
- TREE
- TRACK

N

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PLAN ECO2:
ECOLOGICAL FEATURES

Rev: B

Dec 2019

PLAN ECO3

Approach to Bat Surveys

KEY:

- TRANSECT ROUTE
- CONFIRMED BAT ROOST
- BAT HOP-OVER
- BAT FORAGING ROUTES
- DARK CORRIDOR
- (1) STATIC DETECTOR

N

Based on Exterior Architecture Drawing No. ExA_1868_Illustrative Masterplan

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PLAN ECO3:
APPROACH TO BAT SURVEYS

Rev: A

Dec 2019

PLAN ECO4

Approach to Bird Surveys

KEY:

TRANSECT ROUTE

N

Based on Exterior Architecture Drawing No. ExA_1868_Illustrative Masterplan

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PLAN ECO4:
APPROACH TO BIRD SURVEYS

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Dec 2019

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