



The Sizewell C Project

9.92 Sizewell C Project Draft Bat Method Statement

Revision: 1.0
Applicable Regulation: Regulation 5(2)(q)
PINS Reference Number: EN010012

September 2021

Planning Act 2008
Infrastructure Planning (Applications: Prescribed
Forms and Procedure) Regulations 2009





Bats – Method Statement template to support a licence application

The Method Statement will be used to determine the impact of the proposal on the favourable conservation status (FCS) of the species concerned (Regulation 55(9)(b)).

You are strongly advised to refer to the Bat Mitigation Guidelines.

Please use recent photographs to support your application.

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Important advice:

The format below must be used. Please enter text below each heading keeping information as concise as possible.

All maps/figures that will become part of any annexed licence granted must be submitted as separate documents (with the site name and date included on the map/figure. See section I for list – all others may be included within the Method Statement document (e.g. survey maps/figures) if preferred).

A separate work schedule must also be submitted on form WML-A13a-E5a&b to accompany the Method Statement.

A Executive summary

Provide an overview (no more than 1 side of A4) of what works are proposed and how the impacts identified will be addressed in order to ensure no detriment to the maintenance of the population at a favourable conservation status.

Sizewell C is a proposed nuclear power station that will be built on the Suffolk coast. It will supply power to 6 million homes and generate electricity for 60 years, reducing significant volumes of carbon emissions for each year of operation compared to a gas-fired power station. This draft Organisational licence application is submitted in support of the Development Consent Order (DCO) required to permit the project. It summarises the broad approach to licensing for bats and will be updated as the project progresses through further design and permitting phases.

Bat surveys for project have been ongoing since 2007, and all relevant information is presented in the Environmental Statement (ES) submitted as a component of the DCO. Due to the large amount of data obtained, this licence application only provides survey information and results that are pertinent to the licensable activities outlined. Additional information can be found within the Environment Statements for the Main Development Site and the AD sites.

The Development Site is comprised of the main Sizewell C platform, Sizewell B relocated facilities, offshore works areas, habitat creation and compensation and sports facilities in Leiston along with associated development sites including the provision of a link road and a bypass.

For the purposes of this licence application, the 'licence area' is defined as the red line boundaries of the Main Development Site and each of the six Associated Development sites covered within this licence. This will cover all locations where licensable activities will be undertaken. The six Associated Development Sites included in this licence application are Sizewell Link Road (SLR), Southern Park and Ride (SPR), Green Rail Route (GRR), Two Village Bypass (TVB) and Freight Management Facility (FMF). Although no roosts have been confirmed in these areas, trees with bat roost potential have been identified that are scheduled for removal. These will be mitigated for in line with trees on the main development site.

No tree or building loss is proposed at Yoxford or the Northern Park and Ride and there will be no licensable impacts on this site, so they will not be mentioned further within this licence application.

A detailed suite of surveys has been completed between 2007-2021 to identify roosts, commuting routes and foraging habitat in order to assess potential impacts and inform the mitigation design. Survey work has comprised landscape assessments, activity transect surveys and the deployment of static detectors, building

inspections, emergence and re-entry surveys, bat box checks, and trapping and radio-tracking surveys. Tree assessments have also been conducted to assess the suitability of features for roosting bats.

Main Development Site

A number of bat roosts were identified in buildings at Upper Abbey Farm (UAF). However, these buildings are to be retained and works will be completed under strict controls to avoid lighting and/or noise impacts. At present no licensable impacts to building roosts within the MDS, are anticipated, indirect or cumulative impacts will be further considered as the detailed design develops.

Three tree roosts have been identified during roost suitability assessments within the vegetation clearance zone, and the following measures are proposed to be undertaken (under license) to mitigate for the loss/disturbance of these roosts and severance of commuting routes.

Prior to felling of identified tree roosts (R11, AF24 and G136) and/or trees with high/moderate roost potential, bat boxes will be installed on suitable retained trees within the red line boundary, and at a variety of aspects to provide a range of roosting conditions. As agreed with Natural England, the minimum ratio of replacement roosting features comprises:

- 1:1 high/moderate potential roosting features.
- 2:1 low status roost of common species.
- 4:1 maternity roosts of common species.
- 4:1 low status roost of Annex 2 species.

Therefore the number of bat boxes to be installed within the MDS according to features and roosts to be lost are as set out in the table below:

	Loss type and bat box ratio (as agreed with Natural England)				TOTAL bat boxes
	Low status roosts of common species (2:1)	Potential Roosting Features (1:1)	Loss of maternity roosts (4:1)	Low status roosts of Annex 2 species (4:1)	
Number lost	2 (total of four features)	224	0	1 (total of two features)	
Number of bat boxes required	8	224	0	8	240

To avoid indirect impacts to bats, a Construction Environmental Management Plan (CEMP) and dedicated Reasonable Avoidance Measures Method Statement will be in place detailing sensitive working methodologies to be implemented during construction. A 5m landscape bund (locally a 5m hoarded wooden barrier) will be created on the southern boundary of the temporary construction area to screen the adjacent retaining landscape and ecological receptors. A Lighting Management Plan for construction and operation outlines sensitive lighting measures to minimise disturbance and defines three dark corridors through the temporary construction area as well as low light levels and dark boundaries around the temporary construction area which will minimise noise and lighting disturbance to retained habitats during the construction phase.

The MDS red line boundary encompasses a small part of the Sizewell Marshes SSSI which is to provide the western edge of the power station platform and the 'SSSI Crossing'. The SSSI crossing has been designed to comprise a clear-span bridge through the narrowest part of the SSSI, with the unlit dark void under the bridge and retained trees along the Leiston Drain ensuring severance impacts caused by woodland loss are minimised. Within the construction phase of the development, key commuting routes for bats have been retained within the development (dark corridors, see above). These include a commuting route along Bridleway 19 running north to south through the development, a commuting route along the north of Kenton Hills, a commuting route through the SSSI crossing and along a retained section of Goose Hill Plantation. An additional commuting route has also been secured within the construction phase design, based around water management zones, located through the centre of the construction phase site, between Kenton Hills in the south and Ash Wood in the north.

Areas of woodland where bat roosts or trees of high or moderate value have been identified, and which will not be directly impacted by the works are listed below. These areas will be retained and measures to avoid or minimise reduce impacts (noise/lighting) will be implemented to ensure that the roosting resource is maintained

throughout the construction and operational phases of development:

- Kenton Hills;
- Nursery Covert (part of the Kenton Hills complex);
- Woodland strip to the south of Black Walks;
- Trees located to the west and south of the Round House; and
- Trees located in the Upper Abbey Farm vicinity and north of Old Abbey Farm.

As part of the planned mitigation for roost loss, habitat severance and loss of commuting habitat, extensive habitat creation has already been undertaken and although not specifically aimed at bats, the habitat will provide valuable foraging habitat for bats in the landscape across the wider EDF Energy estate as set out in the Estate Wide Management Plan. An Outline Landscape and Ecology Management Plan (OLEMP) for the order limits outlines habitat management which will replace intensively managed arable farmland with habitats of greater biodiversity value e.g. areas of grassland and increased habitat connectivity once the temporary construction area is removed. The MDS Biodiversity Net Gain report outlines that under current plans, an overall 18.03% increase in biodiversity units and 0.16% increase in hedgerow units is predicted for the MDS in the operational phase of the power station.

A Terrestrial Ecology Monitoring and Mitigation Plan (TEMMP) has also been produced, which defines the ecological monitoring and associated mitigation that will be deployed in relation to bats, during construction and operation, in order to monitor and respond to impacts of the proposals. This relates to roosts in trees subject to removal and those to be retained, roosts in buildings, bat boxes and proposed bat barn, commuting routes and foraging activity across the site.

With all of the measures in place, the proposed development is considered to maintain favourable conservation status of bats in the local area.

Associated Development Sites

No tree roosts have been confirmed within any of the Associated Development sites and no buildings are to be lost from any of these sites.

In line with the bat box ratios set out above, the bat box requirements for each AD site are outlined below.

- Sizewell Link Road – 102 bat boxes
- Southern Park and Ride – 6 bat boxes
- Green Rail Route – 2 bat boxes
- Freight Management Facility – 1 bat box
- Two Village Bypass – 56 bat boxes

Management proposals for each of these AD sites are outlined in the Environmental Statement chapter and involve enhancement of retained woodland areas and planting of woodland, trees and hedgerows. The Terrestrial Ecology Monitoring and Mitigation Plan (TEMMP) applies to the AD sites and this defines the ecological monitoring and associated mitigation that will be deployed in relation to bats, during construction and operation, in order to monitor and respond to impacts of the proposals. This relates to roosts in trees subject to removal and those to be retained, bat boxes, commuting routes and foraging activity across the site.

The proposed AD site developments are therefore considered to maintain favourable conservation status of bats in the local area.

B Introduction

B1 Background to activity/development:

Include a brief summary of:

- Why the activity and a licence are necessary (*e.g. bridge structure repairs are required and will affect a known maternity roost of Daubenton's bats, which will be temporarily lost whilst works are being undertaken; renovation works to an office building will result in the permanent loss of three day roosts of common pipistrelle bats; demolition of an existing hospital to be replaced with flats will result in the loss of a brown-long eared bat maternity roost*).

Development Proposals

EDF Energy is proposing to build a new nuclear power station at Sizewell in East Suffolk, known as Sizewell C. It would be located on the Suffolk coast, approximately halfway between Felixstowe and Lowestoft; to the north-

east of the town of Leiston. The power station, together with the proposed associated developments, is referred to as the Sizewell C Project.

The proposed Sizewell C nuclear power station would comprise two UK EPR™ units and would have an expected electrical capacity of approximately 3,340 megawatts (MW). This would provide enough electricity to supply approximately six million (or about 20%) of Britain's homes, and help facilitate the shift to a low carbon economy, using technology which has been used successfully and safely around the world for many years, and has been enhanced by innovations to improve performance and safety.

As part of the wider Sizewell C development, the new power station will be constructed at the Main Development Site (MDS), adjacent to the existing Sizewell B power station. The construction of the Sizewell C Project will require substantial amounts of construction material to be transported to the site and a number of off-site associated developments to support the scheme during its construction and long-term operation.

The on-site area includes the main platform and associated power station infrastructure and Sizewell B relocated facilities. Off-site areas include marsh harrier compensation land, studio fields complex, Kenton Woods and sports facilities in Leiston. There are seven Associated Developments, namely, Green Rail Route (GRR), Southern Park and Ride (SPR), Northern Park and Ride (NPR), Sizewell Link Road (SLR), Two Village Bypass (TVB), Yoxford (and other rail improvements) and the Freight Management Facility (FMF).

The Associated Development sites are covered by separate Environmental Statement volumes, as well as non-licensable method statements, and are considered within this application. Given that there are no anticipated licensable impacts associated with the Yoxford and NPR developments, these will not be mentioned further.

Throughout this licence application references will be made to the following documents:

2021 Bat Tree Reports

Ref 1: Main Development Site Bat Tree Inspection Report 2021.

Ref 2: Associated Development Site Bat Tree Inspection Report 2021.

Radio-tracking reports

Ref 3: NNB Generation Company. Sizewell Bat Survey Report 2010.

Ref 4: Bk6_ES_V2_Annex_14A8.6_S-EX248_-_Sizewell_Radiotracking_Report_Issue_3_May_2016.

Environmental Statement Chapters:

Ref 5: Main Development Site - Bk6_ES_V2_Ch14_Terrestrial_Ecology_Ornithology

Ref 6: Southern Park and Ride – Bk6_ES_V4_Ch7_Terrestrial Ecology and Ornithology

Ref 7: Green Rail Route – Bk6_ES_V9_Ch7_Terrestrial_Ecology_Ornithology

Ref 8: Freight Management Facility – Bk6_ES_V8_Ch7_Terrestrial_Ecology_Ornithology

Ref 9: Two Village Bypass – Bk6_ES_V5_Ch7_Terrestrial_Ecology_Ornithology

Ref 10: Sizewell Link Road – Bk6_ES_V6_Ch7_Terrestrial_Ecology_Ornithology

Primary Data Appendices:

Ref 11: Main Development Site – Bk6_ES_V2_Ch14_App14A8 Bats

Ref 12: Southern Park and Ride – Bk6_ES_V4_Ch7_App7A_Annex7A-4 Primary

Ref 13: Green Rail Route – Bk6_ES_V9_Ch7_App7A_Annex7A-3 Primary

Ref 14: Freight Management Facility – Bk6_ES_V8_Ch7_App7A_Annex7A-3 Primary

Ref 15: Two Village Bypass – Bk6_ES_V5_Ch7_App7A_Annex7A-3 Primary

Ref 16: Sizewell Link Road - Bk6_ES_V5_Ch7_App7A_Annex7A-3 Primary

TEMMP

Ref 17: Sizewell C - Terrestrial Ecology Monitoring and Mitigation Plan (2021)

Non-licensable Bat Method Statements/Bat Mitigation Strategies

Ref 18: Main Development Site – Bk6_ES_V2_Ap14C1A Bat Mitigation Strategy

Ref 19: Southern Park and Ride – Bk6_ES_V4_Ch7_App7A_Annex7A-5A_RAMs_Bats_[Final]

Ref 20: Green Rail Route – Bk6_ES_V9_Ch7_App7A_Annex7A-6A_RAMs_Bats_[Final]

Ref 21: Freight Management Facility – Bk6_ES_V8_Ch7_App7A_Annex7A-4A_RAMs_Bats_[Final]

Ref 22: Two Village Bypass – Bk6_ES_V6_Ch7_App7A_Annex7A-6A_RAMs_Bats_[Final]

Ref 23: Sizewell Link Road – Bk6_ES_V6_Ch7_App7A_Annex7A-6A_RAMs_Bats_[Final]

The MDS development will lead to the permanent loss of the following roosts which were found as part of roost suitability surveys (both from ground-level and as part of aerial inspections) [REF1] and radio-tracking surveys [REF4]:

- Barbastelle maternity roost – Tree roost: R11 (identified in 2010, although, despite further inspection, this tree has not been identified since);

- *Pipistrellus pygmaeus* roost – Tree roost: AF24;
- *Myotis* roost (considered likely to be *Myotis nattereri*) – Tree roost: G136.

In addition to these confirmed roosts, it is recognised that blocks of woodland can provide a resource for bats in the wider landscape that are difficult to detect because of their transient nature. As such mitigation for the loss of woodland comprises one bat box for each high or moderate potential roost feature due to be lost.

A number of roosts may also be disturbed by loss of immediate habitat adjacent to the roosts, fragmentation of connecting habitat, increased lighting and/or noise, which may indirectly cause changes to the microclimate.

An assessment of these impacts, measures to minimise potential effects and proposed mitigation/enhancements across the whole site (MDS and AD sites) are outlined in the Bat Mitigation Strategy Appendix for the MDS ES chapter, and in the non-licensable method statements for the MDS and each of the AD sites.

Main Development Site [REF18]:

- **Direct impacts to tree roosts:** bat boxes proposed as mitigation for roost loss (using the ratios as set out above). A precautionary mitigation measure is proposed in the form of a bat house (or comparable), in the event of roost abandonment.
- **Indirect impacts to tree roosts:** as a measure to mitigate for the possibility for roost abandonment, 45 bat boxes (suitable for barbastelle roosting) have already been installed across the site. Additional measures to mitigate for indirect impact to trees are described in the non-licensed method statement.
- **Impacts to building-roosts:** There will be no direct impacts to building-roosts within the MDS, and indirect impacts to building-roosts are described in the non-licensed method statement. The aforementioned bat house (or comparable) will also mitigate in the event of building-roost abandonment.
- **Impacts to commuting routes:** Key connectivity will be retained during construction, including the retention of three commuting corridors. These crossings are shown in Figure Dii.
- **Impacts to foraging areas:** The operation phase of the development would secure a demonstrable improvement in biodiversity value and bat foraging habitat. Some habitat creation measures have already been undertaken, which provide habitat of enhanced value to bats during the construction phase.

The non-licensed method statements for the MDS and all AD sites set out similar reasonable avoidance measures summarised as follows [REF19-23]:

- Toolbox talk for bats – to brief contractors on the life history, habitat requirements, identification and legal protection of bats, as well as specific measures to be undertaken to identify the habitats present within the site that have the potential to be used by bats. To outline the environmental measures to be followed in order to avoid breaches of legislation and/or adverse effects on bats that could occur within the vicinity of the working area.
- Construction lighting to be designed to minimise light spill beyond the boundary, and to ensure that there is no light spillage into adjacent habitats and woodland blocks.
- In addition, construction hours would be limited to daylight hours, avoiding night-time works where possible (although some activities may require 24 hour working).
- Close-board fencing where the proposed development site abuts areas of woodland to provide additional protection from vehicle headlights and noise.
- All trees to be removed will be reassessed for bat roosting potential.
- Trees considered of low bat-roost potential will be removed using a soft-felling methodology under the supervision of a suitably experienced, appropriately licensed, bat worker or bat workers present.
- Trees should be removed in October, avoiding the sensitive maternity (April – September) period and hibernation (November – February) periods for bats.
- Any trees of high or moderate roosting value will undergo a thorough inspection prior to felling, comprising either a climb/ground-based inspection using an endoscope and torch, or emergence/re-entry surveys.
- If any roosts are identified, an EPS licence will be required.
- Any additional emergence surveys will be undertaken between April and September inclusive. If no roosts are found, the below approach will be undertaken:
 - Trees identified as having low value to bats should be felled under the watching brief of an ECoW;
 - Where potential roost features for bats cannot be checked, they should be section felled, with each section lowered to the ground carefully. Cuts should be made at least 50cm beyond the extent of the roost feature.
 - If limbs or large branches require felling, consideration should be given to cracks which may close (crushing any bats inside) once the weight of the limb has been removed. If the crack cannot be thoroughly inspected, the crack should be wedged open prior to removal of the limb/branch.

- Any stems of dense ivy should be cut at ground level at least 48 hours before the tree is felled.
- Once the trees have been felled, the potential roost features should be re-checked on the ground by a suitably experienced bat ecologist. If any cannot be thoroughly checked that section should be allowed a rest period of 24 hours to ensure that any individual bats that have been missed the opportunity to relocate.
- If any bats are encountered during the felling operations all works and activity must cease immediately until advice has been provided by the ECoW.
- Bat boxes will be installed on retained trees within the site boundary, in accordance with the ratio provided above.

Within this licence application, only bat roosts and woodland resource which are considered to be impacted (after the application of all mitigation) to the extent that an offence may be triggered under applicable wildlife law are included.

Justification/Rationale for the Development

For the UK to meet its energy and climate change objectives, the Government believes that there is an urgent need for new electricity generation plants, including new nuclear power. Nuclear power generation is a low carbon, proven technology, which is anticipated to play an increasingly important role as we move to diversify and decarbonise our sources of electricity.

New nuclear power stations will help to ensure a diverse mix of technology and fuel sources, which will increase the resilience of the UK's energy system. It will reduce exposure to the risks of supply interruptions and of sudden and large spikes in electricity prices that can arise when a single technology or fuel dominates electricity generation.

Failure to develop new nuclear power stations significantly earlier than the end of 2025 would increase the risk of the UK being locked into a higher carbon energy mix for a longer period of time than is consistent with the Government's ambitions to decarbonise electricity supply. As a result, it would become more difficult and expensive to meet the Government's targets for significant and urgent decarbonisation of the economy and enhanced security of supply.

The Government's policy on nationally significant energy infrastructure, in particular the NPS EN-6, considers the need for and siting of new nuclear power stations at a strategic level. The location of the Sizewell site is identified in the NPS EN-6. The boundary of the nominated site includes land in the Goose and Kenton Hills and a further area to the south of Sizewell A and B power stations, between Sizewell Wents and the hamlet of Sizewell.

- Include current status of planning permission (if applicable) *e.g. full planning permission with all relevant wildlife conditions discharged; permitted development; demolition with prior notification of demolition issues resolved.* If the proposal is for demolition only of a structure supporting a bat roost/s, please confirm whether there are plans to develop the site in the future and if so when.

This project is a Nationally Significant Infrastructure Project. An application was submitted to the Planning Inspectorate on 27 May 2020. This method statement is part of a draft organisational license application to assure Natural England that the scheme's impact on bats has been considered in detail.

B2 Relationship with other nearby development and cumulative impacts

B2.1 Is the current application part of a larger development project? For example, is it part of a phased or multi-plot housing development that will require more than one bat licence? Enter Yes, No or N/A in the text box below. If yes, note a separate **master plan** document will be required.

No - this licence covers the MDS and all AD sites where licensable impacts on bats are due to occur.

Important Advice: If yes to the above, please note that sections in this Method Statement on impact assessment and mitigation measures must explicitly relate *only* to impacts from the works currently proposed.

A project-wide master plan must detail the overall impact assessment and mitigation and explain where, and why, each of the bat licences will be required. The master plan must be included as a separate document to this application: see http://www.naturalengland.org.uk/Images/WML-G11_tcm6-9930.pdf for details that are to be included in this separate document. The separate master plan is expected to take due regard of the overall project to ensure that in-combination effects are considered, and mitigation and compensation measures are both sufficient and coherent.

If the current development is part of a larger development project, summarise very briefly here how the current application relates to the larger project and how the in-combination effects are considered and mitigation/compensation is sufficient.

N/A

Important Advice: to accompany this Method Statement also include Figure. B2.1 for a Master plan overview - and see section I "Map checklist" at the end of this document.

B2.2 Apart from any mention in B2.1, please inform us of any past or future development or other projects (in the last 5 years or next 5 years) in the vicinity which may have significantly impacted or are likely to significantly impact on the same population/s of bats as this application (e.g. loss of maternity or hibernation roosts). You must make reasonable efforts to establish this, including discussions with your client and the Local Planning Authority – stating below what you undertook. A brief summary of the project/s should be provided including the site name and location, dates and if known the licence reference number(s).

Please note we are not expecting details of every licence/planning permission issued within the vicinity of the site – we are only concerned with projects that have the potential to significantly impact or have impacted on same population of bats (maternity and hibernation roosts). Note: Natural England is aiming to make available licensing records from the last 5 years publically available.

Main Development Site

Data from MAGIC [REF11-16] shows 11 bat disturbance licences that have been granted in relation to bat roosts within 5km of the MDS – of these, ten were non-maternity or hibernation roosts:

- EPSM2012-3980 – barbastelle (*Barbastella barbastellus*) (approximately 3.3km north-west of the MDS).
- **2015-8754-EPS-MIT, 2015-8754-EPS-MIT-1 and 2015-8754-EPS-MIT-2 – brown long-eared, Daubenton's bat, Natterer's bat (located within the red line boundary of the MDS to the north-west, in close proximity to Upper Abbey Farm, Leiston).**
- **EPSM2013-6257 – brown long-eared, Daubenton's bat and Natterer's bat (located within the red line boundary of the MDS to the north-west, in close proximity to Upper Abbey Farm, Leiston).**
- EPSM2009-724 – Common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pipistrellus pygmaeus*), whiskered bat (*Myotis mystacinus*), Brandt's bat (*Myotis brandtii*), Daubenton's bat, brown long-eared and Natterer's bat (approximately 4.9km to the west of the MDS).
- 2014-3688-EPS-MIT – common pipistrelle, soprano pipistrelle, Natterer's bat, noctule (*Nyctalus noctule*) (approximately 100m south-east of the MDS).
- EPSI2012-5178 – common pipistrelle, soprano pipistrelle, noctule and Natterer's bat (approximately 100m south-east of the MDS).
- 2017-30648-EPS-MIT – Daubenton's bat (approximately 4.5km to the south-west of the MDS).
- EPSM2009-919 – brown long-eared (approximately 3.2km to the south of the MDS).

The remaining licence was for the destruction of a maternity roost:

- EPSM2011 – 2867 – brown long-eared. This licence application is located approximately 2.5km to the north of the MDS.

Four of these licences were located within the MDS (noted in bold above) – these licences are all in close proximity to Upper Abbey Farm. Two licence applications are located within close proximity to the MDS; however, both of these licence applications expired in August 2018) and are therefore not considered to be impacted by the MDS.

It is possible that the proposed development will impact bat roosts identified in the four licence applications above and their cumulative impacts have been considered in developing this application.

The remaining seven licence applications are all of a sufficient distance from this Scheme, the closest being 3.2km, that the Scheme is unlikely to cause direct or indirect impacts on these roosts. The licences are shown on Figure B2.2i.

Sizewell Link Road

Data from MAGIC shows 10 bat disturbance licences that have been granted in relation to bat roosts within 2km

of the SLR. Of these, 2 are maternity roosts and the rest were non-maternity or hibernation roosts.

- 2015-8754-EPS-MIT, 2015-8754-EPS-MIT-1 and 2015-8754-EPS-MIT-2 – brown long-eared, Daubenton's and Natterer's (approximately 0.9km to the south-east of the SLR).
- EPSM2013-6257 – brown long-eared, Daubenton's and Natterer's (approximately 0.93 km to the south-east of the SLR).
- EPSM2009-724 – common pipistrelle, soprano pipistrelle, whiskered, Brandt's, brown long-eared, Daubenton's and Natterer's (approximately 3.41km to the south-west of the SLR).
- EPSM2012-3980 – barbastelle (approximately 2.33km to the north-east of the SLR).
- EPSM2011-2867 – brown long-eared (approximately 2.43km to the north-east of the SLR).
- 2014-3688-EPS-MIT – common pipistrelle, soprano pipistrelle, Natterer's and common noctule (approximately 3.45km to the south-east of the SLR).
- EPSI2012-5178 – common pipistrelle, soprano pipistrelle, Natterer's and common noctule (approximately 3.45km to the south-east of the SLR).
- 2014-504-EPS-MIT – common pipistrelle and brown long-eared (approximately 3.22km to the north-west of the SLR).

These licences are all of a sufficient distance from the Scheme, the closest being 0.9km from the Scheme, that the Scheme is unlikely to cause direct or indirect impacts on these roosts. The licences are shown on Figure B2.2ii.

Two Village Bypass

Data from MAGIC shows 4 bat disturbance licences that have been granted in relation to bat roosts within 2km of Two Village Bypass. Of these, none are maternity roosts and the rest were non-maternity or hibernation roosts.

- EPSM2009-724 – common pipistrelle, soprano pipistrelle, whiskered, Brandt's, brown long-eared, Daubenton's and Natterer's (approximately 4.34km to the north-west of the Two Village Bypass).
- 2017-30648-EPS-MIT – Daubenton's (approximately 3.73km to the east of the Two Village Bypass).
- EPSM2009-1605 – soprano pipistrelle, barbastelle, brown long-eared, Daubenton's and Natterer's (approximately 3.31km to the south-east of the Two Village Bypass).
- 2017-30195-EPS-MIT – soprano pipistrelle (approximately 4.11km to the south of the Two Village Bypass).

These licences are all of a sufficient distance from the Scheme, the closest being 3.31km from the Scheme, that the Scheme is unlikely to cause direct or indirect impacts on these roosts. The licences are shown on Figure B2.2iii.

Important Advice: locations of other bat mitigation sites that may have significantly impacted or are likely to significantly impact on the same population/s of bats as this application must be shown on Figure B2.2.

C Survey and site assessment (also see section 5 of the Bat Mitigation Guidelines)

C1 Pre-existing information on the bat species at the survey site:

Please undertake a historical data search within a 2km search radius and provide a summary of the results of this search. For example, records from local environmental records centres, local bat groups and previous survey work undertaken at the site is all relevant. Please briefly comment on the results in relation to your project/site

- Should no historical records be found from your search please state this – and specify what searches you undertook.
- Note that you must not include records from National Biodiversity Network (NBN) without first obtaining written permission from the relevant Data Provider.

Due to the large amount of data obtained, this licence application only provides survey information and results that are pertinent to this application and only discusses licensable activities. Full survey information can be found in the primary data appendices to each ES chapter [REF11-16].

Main Development Site

The below is a summary of the five desk study requests from Suffolk Biodiversity Information Service (SBIS) relating to the MDS. These desk study results covered the period between 2007 and 2018. The site boundary of the MDS has varied over time so the data searches relate to the site boundary at the time of the search:

- o Amec Foster Wheeler in 2007 for bat records within 3km of the MDS;
- o a further request by Wood Group in 2009 for bat records within 15km of the MDS;
- o an updated request for bat records by Arcadis in 2014 within 2km of the MDS;
- o a further data request by Arcadis in 2015 for all records of bat roosts within 10km of the MDS; and
- o a further data request by Arcadis in 2018 for all new records of protected species since the 2015 request.

The 2015 desk-study data requested from SBIS identified the presence of 319 bat activity records within 10km of the MDS, dating between 1994 and 2013. Activity records were identified for ten species (barbastelle; brown long-eared; common pipistrelle; soprano pipistrelle; Nathusius' pipistrelle Daubenton's bat; Natterer's bat; noctule; serotine, and Leisler's bat) and four species groups (*Plecotus* spp.; *Pipistrellus* spp.; *Myotis* spp. and "bat spp").

The 2015 desk-study data requested from SBIS identified the presence of 94 bat roost records within 10km of the MDS, dating between 1994 and 2013. A further five bat roosts were identified following the desk study request in 2018. Roost records were identified for seven species (Natterer's bat, noctule, common pipistrelle, soprano pipistrelle, serotine, barbastelle, and brown long-eared bat) and three species groups (*Pipistrellus* spp., *Plecotus* spp. and 'bat spp.').

Five roost records were identified within the MDS. Four related to Natterer's bat roosts at Upper Abbey Farm. In 2004 and 2016, it was noted that barn(s) at Upper Abbey Farm were used as a breeding roost, while no indication of roost type was provided for records in 2012 and 2013. A further roost record at Upper Abbey Farm was identified for a brown long-eared bat breeding roost within a workshop in 2016. Roosting Natterer's bat, noctule, soprano pipistrelle and *Pipistrellus* spp. were identified directly adjacent to the MDS boundary, within bat boxes in Kenton Hills.

A further 14 roost records were identified within the Zone of Influence's (Zoi) of the identified species. Roosts identified included barbastelle, noctule, soprano pipistrelle, common pipistrelle, brown long-eared and serotine. For a detailed description of these data searches please refer to Appendix 14A8 Bats.

It is likely that the surveys undertaken as part of the EDF Sizewell applications are the most up to date information from the area.

Associated Development Sites

Desk studies were undertaken for each of the AD sites in July 2018. This was a review of data obtained from the Suffolk Biodiversity Information Service (SBIS). The search areas for the TVB and SLR were as follows, and all records from within 10 years were reviewed (2008 – 2018):

- Two Village Bypass – CSZ for each species, with the exception of barbastelle which was extended to 10km;
- Sizewell Link Road – CSZ for each species, with the exception of barbastelle which was extended to 10km;

Two Village Bypass

The desk study identified 15 records of bats within the 2km buffer, ranging between 2012 to 2014. These comprised predominately of *Pipistrellus pipistrellus* (12 records), with two records of *Plecotus auritus* and one record of *Pipistrellus pygmaeus*. These records all occurred to the north or north-east/west of the site.

Sizewell Link Road

The desk study identified 49 records of bats within the search area, ranging between 2010 and 2016. These comprised at least 8 different species, including *Barbastella barbastellus* (one record), *Eptesicus serotinus*, *Myotis daubentonii*, *Myotis nattereri*, *Nyctalus noctula*, *Pipistrellus* sp (unidentified), *Pipistrellus pipistrellus*, *Pipistrellus pygmaeus*, *Plecotus* sp (unidentified) and *Plecotus auritus*.

The locations of these records varied, with numerous occurrences at Upper Abbey Farmhouse, Kenton Hills, Middleton and Leiston.

The barbastelle record was from Wood Farm, Westward Ho in 2012, at a location 2.1 km from the site.

C2 Status of the bat species: Detail conservation status at the local, county and regional levels. Please complete the following table, justifying your assessment, and add additional lines where necessary. If the status is unknown then please enter 'unknown'.

Species	Conservation status assessment		
	Local	County	Regional
Barbastelle	Frequent	Widespread but uncommon in Suffolk (Ref 4)	Nationally rare Vulnerable (Ref 5)
Natterer's	Rare	Widespread but uncommon in Suffolk	Nationally common, widespread in the UK Least Concern
Leisler's bat	Rare	Rare and Uncommon in Suffolk	Nationally Rare Near Threatened
Nathusius pipistrelle	Rare	Rare in Suffolk	Uncommon in the UK Near Threatened
Noctule	Rare	Widespread but uncommon in Suffolk	Common in England Least Concern
Serotine	Rare	Uncommon but widespread in Suffolk	Uncommon but widespread in UK Vulnerable
Daubenton's bat	Rare	Widespread and locally common in Suffolk	Widespread in the UK Least Concern
Brown long-eared	Common	Common and widespread in Suffolk	Common and widespread in UK Least Concern
Common pipistrelle	Common	Common and widespread in Suffolk	Common and widespread in the UK Least Concern
Soprano pipistrelle	Common	Common and widespread in Suffolk	Common and widespread in the UK Least Concern

***Please note that you can add more rows to the table: right click in any cell choose Insert > Insert rows below.*

C3 Objectives of the survey to inform this proposal: Please complete the following table, entering 'Yes', 'No' or N/A' to indicate the objective of your survey and provide comments/explanation where necessary:

Survey objective	Yes / No / N-A	Comments
Determine presence / absence of bats	Yes	<p>A detailed suite of bat surveys have been undertaken between 2007 and 2021.</p> <p>From 2007 to 2012: building inspections followed by emergence/re-entry surveys, bat box surveys, tree surveys and radio-tracking surveys were undertaken by the Wood Group.</p> <p>Between 2013 and 2021, further building inspections, building emergence/re-entry surveys, tree assessments, bat box checks and radio-tracking surveys were undertaken by Arcadis Consulting (UK).</p> <p>Comprehensive survey information is presented in Appendix 14A8 and Annex 14A8.4. For the purposes of this application, all relevant information to inform this licence application is included.</p>
Determine bat usage of site (e.g. maternity, hibernation, night roosts in various structures (specify)).	Yes	<p>Emergence/ re-entry surveys, across the active season, were undertaken in 2008 and 2011 by the Wood Group and by Arcadis in 2019 and 2020.</p> <p>Tree assessment surveys to identify suitable roost features and assess roost resource of woodland areas were conducted between 2013 and 2021, with a 2021 update.</p>

		<p>Trapping was undertaken in 2009 and further trapping in addition to radiotracking was undertaken in 2010, 2011 and 2014.</p> <p>Hibernation surveys were also undertaken in 2011.</p> <p>Comprehensive survey information is presented in Appendix 14A8 and Annex 14A8.4. For the purposes of this application, all relevant information to inform this licence application is included.</p>
Identify foraging, commuting or swarming sites (explain)	Yes	<p>Transect activity and static monitoring surveys to identify key commuting and foraging areas across the whole scheme have been undertaken annually between 2007 and 2012, 2014 and 2015, and 2019 and 2020.</p> <p>Bat static detector surveys are being carried out of the MDS in 2021 and crossing point surveys of the TVB and SLR are being conducted to identify key commuting routes to be severed by the Scheme.</p> <p>Comprehensive survey information is presented in Appendix 14A8 and Annex 14A8.4. For the purposes of this application, all relevant information relating to inform this licence application is included.</p>
Other (explain)	Yes	<p>Specialist noise monitoring surveys have been undertaken to determine how noise from the proposed Scheme may impact bat populations within the survey area.</p> <p>For the purposes of this application, all relevant information to inform this licence application is included.</p> <p>For a detailed summary of these surveys, please refer to Ecology Technical Note: Approach to assessing the impacts to bats from high-frequency noise.</p>

C4 Site/habitat description: Please provide:

- Brief descriptions of the site, including total size of the development site (ha) (most often within the red line planning boundary) and areas of the site with potential value to bats (ha).

Main Development Site

The proposed Scheme is located to the north of the existing Sizewell A and B power station complex. The proposed Scheme will comprise on-site areas, including the main platform, Sizewell B relocated facilities and offshore works area and off-site areas. Off-site areas include the marsh harrier compensation land, studio fields complex, Kenton Woods and sport facilities in Leiston.

Associated development sites include the aforementioned SLR, NPR, SPR, GRR, TVB and FMF.

The Scheme is located on the Suffolk coast, and extends to the west. The total size of the Scheme is 365.01ha. The survey area consists of the entire Sizewell C development, including off-site areas within the scheme footprint. It is important to note that due to the length of time in which this Scheme has been considered, there has been variation in the study area since surveys initially commenced. However, this variation has provided valuable contextual data regarding the local distribution of bat species, as well as providing data for the site as it stands in 2021.

The existing EDF Sizewell power station complex comprises a series of buildings associated with the power station, parking areas, access infrastructure and ancillary structures. Woodland encompasses the EDF power station complex on the northern, western and southern boundaries.

The Scheme footprint is dominated by arable fields with field boundaries comprising native, species poor hedgerows or tree lines. Several woodland blocks, comprising plantation, mixed plantation and broadleaved semi-natural woodland, are scattered across the Scheme although almost all broad-leaved woodland is retained by the proposals. The larger area present to the north east includes Hilltop Covert, Dunwich Forest, Goose Hill Plantation and the northern boundary of Kenton Hills. Numerous farm buildings and structures are also scattered to the north and west of the site.

Some of the site falls within the following designated sites:

- Sizewell Marshes SSSI – a wetland area (approximately 104 ha), including fen meadow habitat;
- Suffolk Coast and Heaths Area of Outstanding Natural Beauty (AONB);
- Sizewell Levels and Associated Areas County Wildlife Site (CWS) – largely plantation woodland and acid grassland; and
- Suffolk Shingle Beaches CWS – dune grassland and vegetation shingle.

The location of the site relative to the above-mentioned designations is shown on Figure C5ai.

Two Village Bypass

The Two Village Bypass is located to the south and south-east of Stratford St Andrew, and to the south-west to south-east of Farnham (see Figure 1.1). The site is approximately 54.8 hectares (ha) and comprises of primarily agricultural land (which accounts for approximately 50.4ha of the site) as well as highway land.

The proposed development would comprise a new permanent two-lane single carriageway road that would depart the A12, creating a new route around the south of Farnham and Stratford St Andrew, before re-joining the A12 east of Farnham.

The existing land within the site is predominantly used for agricultural purposes, with some pasture in the Alde Valley (Ref. 1.9). The site also intersects Nuttery Belt and 'The Belt' deciduous woodland, as well as hedgerows between field boundaries. Foxburrow Wood (on the Ancient Woodland Inventory) is located adjacent to the site boundary.

The proposed development would be used for construction traffic associated with the construction of the Sizewell C Project, as well as for general use by the public. The proposed development would therefore reduce the volume of existing and construction traffic traveling through Farnham and Stratford St Andrew, where there are existing, locally perceived, highway safety issues associated with a narrowing of the road in the centre of Farnham and impacts on the amenity of residents. The existing section of the A12 through the two villages would be retained and downgraded.

As the proposed development is permanent, once construction of Sizewell C is completed, it will remain open for general use by the public and would provide legacy benefit to the residents of Farnham and Stratford St Andrew.

The location of the site is shown on Figure C5aai.

Sizewell Link Road

The Sizewell link road site is approximately 101 hectares (ha) and is located to the south of the B1122 and east of the A12. The site passes to the south of Middleton Moor and Theberton.

The proposed development would comprise a new, permanent, 6.8 kilometre (km) single carriageway road, with a design speed of 60 miles per hour, which begins at the A12 south of Yoxford, bypasses Middleton Moor and Theberton before joining the B1122 (see Figure 1.1).

Individual dwellings and farms are located along the route, with the closest residential properties being Vale Cottage, Oakfield house, Coronation Cottages, Annesons Cottage, Hawthorn Cottages, Trust Farm, The Red House Farm, Rosetta and Fir Tree Farm.

The land within the site is predominantly used for agricultural purposes. The site also intersects Plumtreehills Covert (a deciduous woodland), as well as hedgerow between field boundaries. One designated heritage asset lies within the site boundary, the Grade II listed Gate and Gate Piers at the junction of Leiston Road and Onner's Lane.

Two Main Rivers (tributaries of the Minsmere Old River) are crossed by the proposed development, as well as three other unnamed watercourses, and surface water drain. From the west, the first Main River (referred to as the 'Middleton Watercourse') would be crossed at the Fordley Road junction with the B1122. The second Main

River reach would be crossed in Theberton (referred to as the 'Theberton Watercourse'). Despite their Main River status the watercourses are very small where crossed by the proposed link road, no wider than 1.2m at bed level.

Once operational, the proposed development would be used by the general public as well as construction workers arriving by car, park and ride buses from both the northern and southern park and ride sites, and goods vehicles (both light and heavy) delivering freight to the Sizewell C main development site.

The location of the site is shown on Figure C5aiii.

- Brief descriptions of the structures on site indicating their roosting suitability (low, moderate or high), differentiating between **those surveyed** and **not surveyed**, with an explanation why. Ensure structures are referenced and consistently indicated on relevant figures and tables.

Main Development Site - Buildings

Building assessments were undertaken of all buildings across the MDS identified from aerial imagery and site walkovers. Detailed descriptions of each building are contained within Appendix 14A8 and Annex 14A8.4.

The building/structures have been separated into categories depending on their location e.g. outside/within the red line boundary, the likelihood that it will be impacted and whether a licence application is required.

The below structures are located outside the MDS RLB and will not be impacted. **No licence application will be required for these structures:**

- Leiston Abbey: surveyed in 2008
- St. Peter's Church, Theberton: surveyed in 2009
- Lady Chapel, Leiston Abbey: surveyed in 2009
- Barn, Thorpeness: surveyed in 2009
- Aldhurst Farm: surveyed in 2011
- World War II Bunker: surveyed in 2011
- Walk Barn: surveyed in 2015
- Plantation Cottages: surveyed in 2015
- Laboratory, Lover's Lane: surveyed in 2015

The following buildings are located outside of the RLB; however, these buildings may be indirectly impacted by the proposed Scheme. These impacts have been mitigated appropriately within the Environmental Statement and **do not require a licence:**

- Ash Wood Cottages (No. 5 & No.6): Surveyed in 2011, 2015 & 2019
- Lower Abbey Farm (LAF) B1: all buildings at LAF surveyed in 2015 & 2019
- LAF B2
- LAF B3
- LAF B4
- LAF B5
- LAF B6
- LAF B7
- LAF B8
- LAF B9
- LAF B10
- LAF B11

The following buildings were identified within the RLB; however, **no bat roosts** were identified within these buildings and therefore **do not require a licence application:**

- Upper Abbey Farm (UAF) B2
- UAF B3
- UAF B4
- UAF B6
- UAF B7
- UAF B8

The five buildings below, **all identified with bat roosts**, are also located within the RLB. The buildings are to be retained however they may be indirectly impacted by the proposed Scheme. These impacts have been mitigated appropriately within the Environmental Statement and **do not require a licence:**

- UAF B1 – Surveyed in 2008, 2011, 2012/ 2013, 2015 & 2019.
- UAF B5

- UAF B9
- UAF B10
- UAF B11 – surveyed in 2012/2013

Therefore, there are no licensable activities proposed in relation to buildings. The remainder of this licence application will refer to licensable tree and woodland loss.

Main Development Site – Trees

The following tree roosts were identified within the vegetation removal zone, therefore a **licence application is required.**

- R11
- AF24
- G136

In 2010, roost assessments of approximately 500 trees were undertaken across the site. Further tree assessments were undertaken in 2015, 2019 and 2020/2021. Please see Figures C5biv, C5bx, C5bxiii, C5bxvi, C5bxix, C5bxxii, C5bxxv, C5bxxviii for tree assessed across the MDS and each AD site respectively. For a detailed description of these areas please refer to Annex 14A8.4 Results.

Surveys undertaken of trees within the Main Development Site in 2020 identified the following within the licence area (red line boundary):

- 2 confirmed roosts;
- 10 trees identified with high potential;
- 45 trees identified with moderate potential;
- 31 trees identified with low potential;
- Total of 88 trees identified as having low, medium or high potential for roosting bats, or confirmed roosts. Two trees were identified as a confirmed roost (AF24 and G136).

In 2021, surveys of vegetation removal zones only (trees to be directly impacted) assessed only trees previously identified as being of high or moderate value, as well as identifying a number of new trees with bat roost potential. The results of these surveys indicated that the trees to be felled included:

- 2 confirmed roosts;
- 8 trees identified with high potential;
- 35 trees identified with moderate potential;
- 28 trees identified with low potential
- A total of 73 trees identified as having low, medium or high potential for roosting bats, or confirmed roosts.

The majority of the trees of high and moderate values were present within 'Additional Features' (hedgerows and scattered trees) and Goose Hill Plantation, which supported 32 and 20 trees of moderate, high or confirmed roost value respectively. These areas also supported the two confirmed roosts – AF24 (Additional Features) – single soprano pipistrelle day roost, and G136 (Goose Hill Plantation) – Natterer's hibernation roost. This is because a larger area of Goose Hill Plantation and additional features were encompassed by the vegetation removal zone. However, the 2020 surveys identified Goose Hill Plantation as an area of woodland supporting relatively lower numbers of trees (per unit area) with potential roost features compared to other areas such as Kenton Hills, and it was comprised predominately of young pine plantation.

A breakdown of the tree-roosting value present within woodland blocks is provided below [REF1]:

- Kenton Hills (area along the northern track):
 - The 2020 survey identified 66 trees with bat roost value in this area (7 low, 46 moderate and 13 high).
 - The 2021 survey identified only 2 trees of moderate value within the vegetation removal zone.
- Fiscal Policy Woodland:
 - The 2020 update survey identified a total of 10 trees (4 low and six moderate).
 - The 2021 survey identified a total of 3 trees of low value and 3 trees of moderate value within the vegetation removal zone.
- ⊖ Goose Hill Plantation:
 - ⊖ The 2020 survey identified a total of 71 trees (17 low, 14 moderate and 1 high);
 - ⊖ The 2021 survey identified a total of 17 trees of low value, 11 trees of moderate value and 1 tree

of high value within the vegetation removal zone.

⊖ Land adjacent to Fiscal Policy:

- ⊖ The 2020 survey identified 7 trees of low value, 7 trees of moderate value and 5 trees of high value, and one confirmed roost.
- ⊖ The 2021 survey identified 5 trees of low value, 7 trees of moderate value, and 5 trees of high value, as well as one confirmed roost within the vegetation removal zone.

○ Additional Features (hedgerows and scattered trees):

- The 2020 survey identified 3 trees of low value, 16 trees of moderate value and 4 trees of high value.
- The 2021 survey identified 3 trees of low value, 12 trees of moderate value and 2 trees of high value within the vegetation removal zone.

Area	Trees to be removed			
	Confirmed roost	High value	Moderate value	Total
Kenton Hills	0	0	2	2
Fiscal Policy	0	0	3	3
Goose Hill Plantation	1	1	11	13
Land adjacent to Fiscal Policy	1	5	7	13
Hedgerows and scattered trees (Additional Features)	0	2	12	14
TOTAL	2	8	35	45

In addition to the 2020 and 2021 tree surveys, barbastelle trapping and radiotracking undertaken in 2010, 2011 and 2014 across the scheme identified a total of 37 tree roosts, of these 30 were maternity roosts and 7 were unknown, due to the roosting bat being juvenile, male or a non-breeding female. Roosts 1 – 13 were identified in 2010, Roost 9 and 13 were confirmed in the 2011 surveys, Roosts 14 – 22 were identified and in 2014 Roosts 23 – 37 were identified. The only roost that was found within the licence area is Roost 11, which has not been identified in the most recent survey visits. Figure C6xii shows the location of each Barbastelle roost identified to date.

Associated Development Sites – Buildings

There are no buildings to be demolished within any of the Associated Development sites, and no licensable impacts predicted, so no building surveys have been undertaken to inform bat roosting within buildings associated with these sites.

Associated Development Sites – Trees

Similarly to the MDS, tree surveys of the AD sites included ground-level tree assessment surveys of all trees within the site in 2020, followed by an update in 2021 (with aerial inspection where possible) of trees due to be impacted by the proposed development [REF2]:

Surveys undertaken of the Associated Development Sites in 2020 identified the following:

- 0 confirmed roosts;
- 33 trees identified with high potential;
- 57 trees identified with moderate potential;
- 34 trees identified with low potential;
- Total of 124 trees identified as having low, moderate or high potential for roosting bats.

In 2021, surveys of vegetation removal zones only (trees to be directly impacted) assessed only trees previously identified as being of high or moderate value, as well as identifying a number of new trees with bat roost potential. The results of these surveys were as follows:

- 0 confirmed roosts.
- 38 trees identified as high potential;
- 37 trees identified with moderate potential;
- 12 trees identified with low potential;
- Total of 87 trees identified as having low, moderate or high potential for roosting bats due to be felled for

development.

The trees of high and moderate potential were predominately concentrated within the Two Village Bypass (TVB) and Sizewell Link Road (SLR) vegetation removal zones (28 and 42 high/moderate value trees respectively in these areas).

Only the areas of woodland that are likely to be impacted by the proposed works and which contained trees with bat roost potential are considered within this application.

The numbers of high/moderate value trees recorded in each Associated Development are reported below:

- Sizewell Link Road:
 - The 2020 survey identified 47 trees of high/moderate value (12 high potential, 35 moderate potential) for further survey in 2021.
 - The 2021 survey identified 19 as high value and 23 as moderate value. The remaining trees were assessed as being of low or negligible value.
- Southern Park and Ride:
 - The 2020 survey identified two trees of high value for further survey.
 - Of these two trees, the 2021 survey identified 1 high potential and 1 moderate potential tree within the vegetation removal zone.
- Green Rail Route:
 - The 2020 survey identified 3 trees with high/moderate bat roost potential (1 high value and 2 moderate value).
 - Of these 3 trees, the 2021 survey identified 2 as having bat roost potential (1 high value and 1 moderate value) within the vegetation removal zone. The third was assessed as being of Negligible value.
- Two Village Bypass:
 - The 2020 survey identified 36 high/moderate value trees for further survey (18 high and 18 moderate).
 - Of these 36 trees, the 2021 survey reassessed 18 as high value and 11 as moderate value), and the remainder as low or negligible value.
- Freight Management Facility:
 - The 2020 survey identified one tree of moderate value for further survey.
 - The 2021 survey also assessed this tree as being of moderate value.

Within the Associated Development sites, the following tree loss is proposed:

Area	Trees to be removed		
	High value	Moderate value	Total
Sizewell Link Road	19	23	42
Southern Park and Ride	1	1	2
Green Rail Route	1	1	2
Two Village Bypass	18	11	29
Freight Management Facility	0	1	1
TOTAL	39	37	74

- A description of adjacent areas/offsite habitats, specifying any relevance to bats, including descriptions of habitat/s relevant to bat commuting/foraging behaviour.

Main Development Site

To the north of the Scheme footprint, the Minsmere to Walberswick Heaths and Marshes SAC supports wetland, heathland and coastal vegetation which may provide potentially suitable foraging habitat for bats. To the west and south of the Scheme, further woodland blocks and arable fields with interconnected hedgerows are present. These habitats provide suitable roosting, foraging and commuting opportunities for bats within the landscape.

Associated Developments

- **Sizewell Link Road.** This site is also within proximity of Minsmere to Walberswick Heaths and Marshes SAC (at the eastern end). The road intersects a railway line running from north to south which is heavily vegetated and likely to provide foraging and commuting opportunities, and in addition numerous hedgerows and woodland blocks are present in the surrounding area.
- **Two Village Bypass.** This site is bordered by a number of woodland blocks, namely Foxburrow Wood (Ancient Woodland), Pond Wood and Nuttery Belt. In addition, there are other woodland blocks, hedgerows and watercourses in the surrounding area which would provide foraging and commuting opportunities to bats.
- **Green Rail Route.** This involves works to an existing rail way line, which is likely to provide commuting and foraging opportunities to bats. The surrounding habitat is predominately intensively managed arable, bordered by hedgerows, trees and woodland blocks.
- **Freight Management Facility.** The development site is bounded to the north by the A14 and to the south by Felixstowe Road. The surrounding habitats consist predominately of intensively managed arable, with a pond and a block of woodland to the south-west.
- **Southern Park and Ride.** The development site is bounded to the south by the A12 and surrounded by intensively managed arable farmland and small blocks of woodland. In the wider landscape there is more extensive woodland to the north-east and north-west and the River Deben to the south-west.

- Please also include annotated (cross reference the structures) and dated photographs (showing both internal and external survey areas) as these are very useful as an assessment aid. These can be inserted below or submitted as a separate (referenced) document.

N/A – no buildings with licensable impacts.

C5 Field survey(s):

Surveys must be up to date and have been conducted within the current or most recent optimal season. Where a site/structure/tree has demonstrable hibernation potential appropriate surveys must be carried out. Surveys must be undertaken in accordance with the most up to date edition of the Bat Conservation Trust (BCT) *Bat Surveys for Professional Ecologists – Good Practice Guidelines* and the *Bat Mitigation Guidelines*.

C5a Justification for surveys that deviate from the best practice guidelines: Please provide full justification below if your surveys deviate from the aforementioned best practice guidelines, confirming how you have obtained a full appreciation of the bat species roosting at the site, and of the type and status of roosts they use on site and in the context of the immediate surrounding area. **Please note that inadequate survey information is likely to cause delays to your licence application and may result in a Further Information Request.**

Due to the predicted impacts on woodland habitats as a result of the Scheme, Advanced Licensed Bat Survey Techniques (ALBSTs) were employed to undertake the necessary information-gathering of bats roosting in trees potentially affected by the construction and operation of the Scheme.

Tree-roosting bats are particularly challenging to survey, being small, nocturnal, highly mobile and often do not emit echolocation when emerging, all of which limit the effectiveness of conventional survey methods (e.g. acoustic surveys). Unlike bats that use buildings, tree-roosting bats may only occupy a tree for a period of as little as a few days. As such, the main constraint to surveying bat tree roosts relates to the very low encounter rates due to the resultant frequent movement of bats. As a result, traditional emergence/re-entry surveys are unlikely to effectively determine the presence of bats, and even tree climbing will only encounter evidence of bats using trees approximately 7% of the time (Andrews and Gardner, 2015).

The Bat Conservation Trust (BCT) guidelines (Collins, 2016) recognises these issues and whilst surveys for bats in trees using traditional emergence/re-entry surveys are generally recommended, the guidelines acknowledge these methods as being unlikely to provide confidence in negative results for trees: “Where there are large numbers of trees, the efficiency and efficacy of PRF inspection and other techniques should be evaluated and alternative methods considered. In situations where there are a lot of trees to survey, such as in woodland, it may be more effective to consider advanced licence bat survey techniques (ALBSTs)” (Collins, 2016: 6.3.6)

And: "More detailed information gained from ALBST is likely on projects with greater impacts on 'difficult to survey' bat species such as tree-roosting or quiet-calling species... or in particular habitats such as woodland.

Non-invasive survey methods are generally unable to confirm the sex, age class or breeding status of individual bats, especially away from the roost. Projects of developments that are likely to have high direct or indirect impacts on bats ... will be required to have much more detailed data sets, potentially justifying the use of ALBST. Radio telemetry can provide valuable data on roost use [and] can locate roosts of challenging species (especially in trees)." (Collins, 2016: 9.1)

The guidelines do suggest alternative methods such as radio-tracking bats as being more effective at finding roosts in trees, particularly where larger numbers of trees or woodland areas are being affected by projects such as infrastructure schemes. Although Walkers Spinney is a relatively small ancient woodland, these techniques are still considered to be proportionate and more appropriate than traditional techniques.

Therefore, in order to gather the required data in a way that allows the surveyors to locate key, high conservation value roosts (maternity and roosts of Annex 2 species), establish a species assemblage for the woodland, gain a higher level of confidence in assessment of the number and locations of roosts of lower conservation value, and avoid harm to individual bats during the initial clearance process, the following two-step approach has been adopted, of which Stage 1 has been completed to inform this licence application:

Stage 1 comprises a series of bat trapping, tracking and tree-roost characterisation assessment surveys undertaken between 2007 - 2021. These surveys target bats of specific breeding status to enable surveyors to identify key roosts. Tree inspections (ground level and climbing surveys) were also undertaken to assess the potential for trees to support roosting bats.

Stage 2 comprises a methodology aimed at avoiding impacts to individual bats during the clearance phase: the undertaking of endoscope surveys of potential roost features (PRFs) which are to be lost to construction, and relocation of any bats found (Rescue Surveys). Bats, if found, will be located to pre-installed bat boxes on Site or released at dusk, away from works areas at the same site. The numbers and species of bats found during this stage may trigger the provision of additional bat boxes. Any PRFs with unexpected maternity roosts present are to be retained with a 10 m operational buffer until the bats have left the roost (this is unlikely given the timing of works to avoid the maternity season, see Works Schedule).

Following this approach, a higher number of roosts present within the woodland are likely to be identified, with an overarching mitigation strategy that is rooted in a thorough understanding of the assemblage, number, usage and roost diversity determined by the trapping and tracking surveys (and associated emergence surveys).

This methodology employed is considered to be in line with best practice guidelines and is not considered to be a deviation of those guidelines. This method relies on a two-step approach to meet requirements for maintaining the Favourable Conservation Status (FCS) of the populations concerned. All trapping, tagging and tracking was undertaken according to the conditions of the licence(s) as issued.

The woodland as a whole is considered to provide a roosting resource throughout the year including supporting maternity roosts and day roosts. This has been assessed and confirmed as part of this licence. Suitable working measures have been incorporated for all roost types.

C5b Please complete the following tables and add additional lines where necessary (right click in any cell outside the grey box area. Choose Insert > Insert rows below). Please enter 'N/A' if the table is not applicable to your survey. Please ensure the information is consistent with Figure C5b (showing all buildings, structures and habitats that are within the survey area and distinguishing those that were surveyed and those that were not; indicate where surveyors were located):

Visual inspection			
Date of each survey visit (e.g. format 01/06/13)	Structure reference / location	Equipment used (e.g binoculars, endoscope)	Weather – (Include temps, precipitation, Beaufort wind scale etc)
2020 Surveys			
<p>Comments: Surveyors working in pairs to undertake ground-level assessments of trees within the red line boundary.</p> <p>Survey limitations: A known constraint of ground-level tree assessments is that it is not always possible to visualise every feature. Where features may have been present but not visible, the tree was assessed on a precautionary basis.</p>			

22 – 26 June 2020.	Goose Hill Plantation/Kenton Hills/Fiscal Policy/	Binoculars and torches	Calm, dry. Temperatures ranging between 22 – 25 degrees.
30 June – 3 July 2020.	Goose Hill Plantation/Kenton Hills/Fiscal Policy/	Binoculars and torches	Cloudy, calm/light winds, dry. Temperatures ranging between 16 – 21 degrees.
6 – 10 July 2020.	Goose Hill Plantation/Kenton Hills/Fiscal Policy/	Binoculars and torches	No data.
13 – 17 July 2020.	Goose Hill Plantation/Kenton Hills/Fiscal Policy/	Binoculars and torches	Temperatures ranging between 17 – 23 degrees. One day of surveys (15 th July) undertaken in light rain, but otherwise dry and mild conditions.
12 – 14 August 2020	Goose Hill Plantation/Kenton Hills/Fiscal Policy/	Binoculars and torches	No cloud, calm, dry. 27 degrees.
17 – 21 August 2020	Goose Hill Plantation/Kenton Hills/Fiscal Policy/	Binoculars and torches	No cloud, calm, dry. 19 and 20 degrees.
1 – 4 September 2020	Goose Hill Plantation/Kenton Hills/Fiscal Policy/	Binoculars and torches	Full cloud cover, calm, dry. 20 to 21 degrees.

2021 Surveys

Comments: Surveyors working in pairs to undertake aerial (where possible) assessments of the trees – climbing or ladder. Trees identified in 2020 as being of Moderate, High or Confirmed Roost value and which fell within the vegetation removal zone were subject to further assessment. Where possible, features were subject to aerial assessments to determine the value of the feature to roosting bats. Trees not possible to climb were subject to an update assessment from ground-level and bat roost value considered on a precautionary basis. The final results of the visual assessments are shown in the figures.

Survey limitations: As previously mentioned, given the transitional nature of tree-roosting bats, absence of bats from a feature on any survey occasion does not indicate that this is not used as a roost. The surveys were also conducted over the winter, which makes visualising features easier (in the absence of tree foliage) but means that summer roosts would not have been identified. However, the objective of the survey was to identify suitable roost resource within woodland blocks, and although two roosts were confirmed, it is acknowledged that many of the suitable features identified may support bats at some point during the year.

11 – 15 January 2021	Additional Features	Personal safety equipment and ropes used to access tree, ladder, binoculars, torches.	No data.
18 – 22 January 2021	Kenton Hills, Goose Hill, Fiscal Policy	Personal safety equipment and ropes used to access tree, ladder, binoculars, torches.	No data.
1 – 5 February 2021	Kenton Hills, Goose Hill, Fiscal Policy	Personal safety equipment and ropes used to access tree, ladder, binoculars, torches.	No data.
20 February 2021	Additional Features	Personal safety equipment and ropes used to access tree, ladder, binoculars, torches.	No data.
7 – 8 April 2021	No data.	Personal safety equipment and ropes used to access tree, ladder, binoculars, torches.	No data.

Please provide surveyors names (including Class Licence registration number if applicable) and ensure the above table states the number of surveyors used for each survey visit undertaken.

Names, Qualifications and Licence numbers (N.B. this table includes all surveyors involved in any survey work on this Scheme, and surveyors will be listed after each survey type).

Name	Qualifications	NE bat licence number (if applicable)
Nick Downs	BSc, PhD, MCIEEM, CEnv	2015-11591-CLS-CLS
Henry Gunning	BSc, MSc, ACIEEM	N/A
Toby Abrehart	MCIEEM, FLS	N/A
Rob Regan	BSc, MSc	2019-39454-CLS-CLS
Marielle James	BSc (Hons), MRes, MCIEEM, MCIWEM	N/A
Alex Ellis	BSc, MCIEEM	2015-11399-CLS-CLS
Polly Lockyer	BSc (Hons), ACIEEM, tree-climbing and aerial rescue	2018-33429-CLS-CLS
Eilish Halford	BSc (Hons) ACIEEM, tree-climbing and aerial rescue	N/A
Duncan Sweeting	Unknown	2015-16145-CLS-CLS
James Rowlands	BSc MSc MEM R.E.S.	N/A
Ana Pino-Blanco	BSc MSc	N/A
Alister Fothergill	GradCIEEM	N/A
Adrian George	BSc, MCIEEM	CL18:2017-32910-CLS-CLS
Helen Lucking	MIEEM	NE no. 20091142 Licence no. 2014-1934-Sci-Sci
Alastair Wrigley	Unknown	NE no. 20091216
Narawan Williams	Unknown	N/A
Edward Bodsworth	MIEEM	NE no. 20093959
Geoff Billington	Unknown	N/A
Stephanie Murphy	BSc (Hons) MSc, PhD, MCIEEM	Licence number not known
Paul Spencer	MCIEEM BSc (Hons) MSc	Licence number not known
Alison Johnston	Unknown	Licence number not known
Bethany Hasell	QCIEEM	N/A
Rory Roche	Unknown	N/A

2020 Tree surveys (Ground-level)

- **23 - 30 June 2020** – Nick Downs, Henry Gunning and Toby Abrehart.
- **30 June–03 July 2020** – Henry Gunning and Rob Regan.
- **06–10 July 2020** – Nick Downs, Marielle James, Henry Gunning, Rob Regan and Toby Abrehart.
- **13–17 July 2020** – Nick Downs, Marielle James, Henry Gunning and Rob Regan.
- **12–14 August 2020** – Henry Gunning and Rob Regan.
- **17–21 August 2020** – Alex Ellis and Henry Gunning.
- **01–04 September 2020** – Nick Downs and Marielle James.

2021 Tree surveys (Update survey including aerial inspections where possible)

- **11 - 15 January 2021** – Adrian George and Eilish Halford.
- **18 – 22 January 2021** – Adrian George and Eilish Halford.
- **1 – 5 February 2021** – Adrian George and Eilish Halford.
- **20 February 2021** – Adrian George and Eilish Halford.
- **07 – 08 April 2021** – Polly Lockyer and Eilish Halford.

Dusk survey

Date of each survey visit (e.g. format 01/06/13)	Start and end times and time of sunset	Structure reference / location	Equipment used (include make of bat detectors and logging equipment)	Weather – (Include start and end temps, precipitation, Beaufort wind scale etc)
Comments (applicable to all dates): Woodland Back-tracking. Surveys were conducted in line with the Collins 2016 best practice guidelines. Dusk surveys started 30 minutes before sunset and ended 2 hours after sunset. A team of four surveyors stood in open areas of woodland and then tracked bats along their flightpath to indicative				

roosting locations. The data used on each survey was used to inform surveyor positions for the following survey.				
22 June 2020	Start time: 20:48 End time: 23:18 Sunset: 21:18	Fiscal Policy	Elekon Bat Loggers	17°C
23 June 2020	Start time: 20:48 End time: 23:18 Sunset: 21:18	Goose Hill Plantation	Elekon Bat Loggers	19°C
14 July 2020	Start time: 20:38 End time: 23:08 Sunset: 21:08	Goose Hill Plantation	Elekon Bat Loggers	14°C
15 July 2020	Start time: 20:37 End time: 23:07 Sunset: 21:07	Fiscal Policy	Elekon Bat Loggers	15°C
03 August 2020	Start time: 20:10 End time: 22:40 Sunset: 20:40	Fiscal Policy	Elekon Bat Loggers	15°C
05 August 2020	Start time: 20:06 End time: 22:36 Sunset: 20:36	Goose Hill Plantation	Elekon Bat Loggers	17°C
01 September 2020	Start time: 19:10 End time: 21:40 Sunset: 19:40	Fiscal Policy	Elekon Bat Loggers	14°C
02 September 2020	Start time: 19:07 End time: 21:37 Sunset: 19:37	Goose Hill Plantation	Elekon Bat Loggers	15°C

Please provide surveyors names (*including Class Licence registration number if applicable*) and ensure the above table states the number of surveyors used for each survey visit undertaken.

- **22 June 2020** – Fiscal Policy: Duncan Sweeting, Henry Gunning, James Rowlands and Nick Downs.
- **23 June 2020** – Goose Hill Plantation: Duncan Sweeting, Henry Gunning, James Rowlands and Nick Downs.
- **14 July 2020** – Goose Hill Plantation: Duncan Sweeting, Ana Pino-Blanco, Marielle James and Nick Downs.
- **15 July 2020** – Fiscal Policy: Duncan Sweeting, James Rowlands, Marielle James and Nick Downs.
- **03 August 2020** – Fiscal Policy: Duncan Sweeting, James Rowlands; Marielle James, and Nick Downs.
- **05 August 2020** – Goose Hill Plantation: Duncan Sweeting, Ana Pino-Blanco, Marielle James and Nick Downs.
- **01 September 2020** – Fiscal Policy: Duncan Sweeting, James Rowlands; Marielle James and Nick Downs.
- **02 September 2020** – Goose Hill Plantation: Duncan Sweeting, Alister Fothergill, Marielle James and Nick Downs.

Dawn survey

Date of each survey visit (e.g. format 01/06/13).	Start and end time and time of sunrise	Structure reference / location	Equipment used (include make of bat detectors and logging equipment)	Weather – (Include start and end temps, precipitation, Beaufort wind scale etc)
Comments (applicable to all dates): Woodland Back-tracking. Surveys were conducted in line with the Collins 2016 best practice guidelines. The dawn surveys commenced 2 hours before sunrise and ended when bat activity was no longer recorded, usually within 15 minutes of sunrise. Surveyors stood in open areas of woodland and then tracked bats along their flightpath to indicative roosting locations. The data used on each survey was used to inform surveyor positions for the following survey.				
23 June 2020	Start time: 02:32 End time: 04:47 Sunrise: 04:32	Fiscal Policy	Elekon Bat Loggers	14°C
24 June 2020	Start time: 02:33 End time 04:48 Sunrise: 04:33	Goose Hill Plantation	Elekon Bat Loggers	14°C

15 July 2020	Start time: 02:50 End time: 05:05 Sunrise: 04:50	Goose Hill Plantation	Elekon Bat Loggers	11°C
16 July 2020	Start time: 02:52 End time: 05:07 Sunrise: 04:52	Fiscal Policy	Elekon Bat Loggers	14°C
04 August 2020	Start time: 03:19 End time: 05:34 Sunrise: 05:19	Fiscal Policy	Elekon Bat Loggers	9°C
06 August 2020	Start time: 03:22 End time: 05:37 Sunrise: 05:22	Goose Hill Plantation	Elekon Bat Loggers	17°C
02 September 2020	Start time: 04:07 End time: 06:22 Sunrise: 06:07	Fiscal Policy	Elekon Bat Loggers	6°C
03 September 2020	Start time: 04:08 End time: 06:23 Sunrise: 06:08	Goose Hill Plantation	Elekon Bat Loggers	14°C

Please provide surveyors names (including Class Licence registration number if applicable) and ensure the above table states the number of surveyors used for each survey visit undertaken.

- **23 June 2020** – Fiscal Policy: Duncan Sweeting, Henry Gunning, James Rowlands and Nick Downs.
- **24 June 2020** – Goose Hill Plantation: Duncan Sweeting, Henry Gunning, James Rowlands and Nick Downs.
- **15 July 2020** – Goose Hill Plantation: Duncan Sweeting, Ana Pino-Blanco, Marielle James and Nick Downs.
- **16 July 2020** – Fiscal Policy: Duncan Sweeting, James Rowlands, Marielle James and Nick Downs.
- **04 August 2020** – Fiscal Policy: Duncan Sweeting, James Rowlands, Marielle James and Nick Downs.
- **06 August 2020** – Goose Hill Plantation: Duncan Sweeting, Ana Pino-Blanco, Marielle James and Nick Downs.
- **02 September 2020** – Fiscal Policy: Duncan Sweeting, James Rowlands; Marielle James and Nick Downs.
- **03 September 2020** – Goose Hill Plantation: Duncan Sweeting, Alister Fothergill, Marielle James and Nick Downs

‘Other’ survey (please specify e.g. trapping, remote, etc)

Date of each survey visit (e.g. format 01/06/13).	Start and end times	Structure reference / location	Equipment used (include make of bat detectors and logging equipment)	Weather – (Include start and end temps, precipitation, Beaufort wind scale etc)
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The purpose of the surveys was to identify:

- The assemblage of bats using the site; and
- Roosts within the licence area.

Other data may also be collected where possible (tagged bat behaviour and location permitting) including flight lines and foraging areas. The survey effort has been split into three tables, **Table A** setting out the trapping effort and the details of the bats caught, and **Table B** detailing the tracking and roost characterisation effort.

Survey Limitations:

On some of the trapping and radio-tracking dates the weather was suboptimal, with rain, mist or cold temperatures which may have impacted the success of the trapping.

In some instances, the bats travelled through (or roosted within) areas that were not accessible, and in these

instances the location of the bat was approximated through triangulation.				
Table A Trapping				
26 May 2009 - Trapping	Start time: End time: Sunset: 20:58	Fiscal Policy Woodland - TM 45387 63962	6x mist nets, 3x harp traps	15-14oC, 1-2, 0% cloud cover, dry
Comments (to include # of surveyors used for each visit): 4 surveyors. 3 nights of surveying (harp trapping & mist netting). Trapping undertaken by Corylus Ecology with assistance from BSG. Total of 42 bats were caught over the 3 nights of trapping including 6 species - barbastelle, Daubenton's bat, Common & soprano pipistrelle, Natterer's bat and brown long-eared. Total of five barbastelle were caught (1 M, 4 F).				
27 May 2009 - Trapping	Start time: End time: Sunset: 20:59	Nursery Covert - TM 46210 64418	3x mist nets, 2x harp traps	14oC, 1-2, 0% cloud cover, dry
Comments: 4 surveyors				
28 May 2009 - Trapping	Start time: End time: Sunset: 21:00	Fiscal Policy Woodland - TM 45387 63962	2x mist nets, 2x harp traps	14-8oC, 3-4, 0% cloud cover, dry
Comments: 4 surveyors				
1 June 2010 - Trapping	Information not available.	T1 / Fiscal Policy - TM 45387 63962	3x harp traps, acoustic lure, mist netting	Information not available.
Comments: 8 nights of trapping between the 1 – 8 June 2010 with radio-tracking surveys continuing until 12 June 2010. Surveys were undertaken by Corylus Ecology with assistance from BSG and Entec. Total of 177 bats from eight species were caught including barbastelle, Natterer's bat, Daubenton's bat, serotine, noctule, brown long-eared, common & soprano pipistrelle.				
2 June 2010 - Trapping	Information not available.	T2 / Nursery Covert near Turf Pits - TM 46357 64532, Tree Roost 1 (R1) East-west track of Kenton Hills TM 45620 64130	3x harp traps, acoustic lure, mist netting, hand-netting	Information not available.
Comments: Seven surveyors with a small number of additional assistants from BSG and Entec to help with trapping efforts.				
3 June 2010 - Trapping	Information not available.	T3 / Upper Abbey Track - TM 45351 64357, Tree Roost 2 (R2), East-west track of Kenton Hills TM 45740 65200	3x harp traps, acoustic lure, mist netting, hand-netting	Information not available.
Comments: Seven surveyors with a small number of additional assistants from BSG and Entec to help with trapping efforts.				
4 June 2010 - Trapping	Information not available.	T4 / The Grove - TM 46695 65216	4x harp traps, acoustic lure, mist-netting	Information not available.
Comments: Seven surveyors with a small number of additional assistants from BSG and Entec to help with trapping efforts.				
5 June 2010 - Trapping	Information not available.	T1 / Fiscal Policy - TM 45387 63962, Tree Roost 3 (R3), Ash Wood TM 45740 65200	4x harp traps, acoustic lure, mist-netting, hand-netting	Information not available.
Comments: Seven surveyors with a small number of additional assistants from BSG and Entec to help with trapping efforts.				
6 June 2010 - Trapping	Information not available.	T6 / Broom Covert - TM 45403 65212, Tree Roost 7 (R7), The Grove TM 46722 65216	2x harp traps, acoustic lure	Information not available.
Comments: Seven surveyors with a small number of additional assistants from BSG and Entec to help with trapping efforts.				
7 June 2010	Information not available.	T7 / Sandy Lane,	4x harp traps, mist-	Information not available.

	available.	Tree Roost 8 (R8), The Grove TM 46677 65254	netting, hand-netting	available.
Comments: Seven surveyors with a small number of additional assistants from BSG and Entec to help with trapping efforts.				
8 June 2010	Information not available.	T2 / Nursey Covert, near Turf Pits	Harp traps, mist-netting	Information not available.
Comments: Seven surveyors with a small number of additional assistants from BSG and Entec to help with trapping efforts.				
30 July 2011 - Trapping	Information not available.	T1 / Fiscal Policy	Mist nets including 10m high mist net, harp traps, acoustic lures	Information not available.
Comments: 7 surveyors. 5 nights of trapping between the 30 July – 3 August 2011 with radio-tracking surveys continuing until 11 August 2011. Surveys were undertaken by Corylus Ecology with assistance from BSG. Total of 148 bats from at least seven species including barbastelle, Natterer's bat, serotine, brown long-eared, Nathusius, common & soprano pipistrelle.				
31 July 2011 - Trapping	Information not available.	T2 + T8 / Turf Pits	Mist nets including 10m high mist net, harp traps, acoustic lures	Information not available.
Comments: Seven surveyors worked on the project with assistance from a small number of staff from BSG.				
1 August 2011 - Trapping	Information not available.	T3 / Upper Abbey Track	Mist nets including 10m high mist net, harp traps, acoustic lures	Information not available.
Comments: Seven surveyors worked on the project with assistance from a small number of staff from BSG.				
2 August 2011 - Trapping	Information not available.	Sandling's Walk, Tree Roost 14 (R14) TM 45737 65171	Mist nets including 10m high mist net, harp traps, 2x acoustic lures	Information not available.
Comments: Seven surveyors worked on the project with assistance from a small number of staff from BSG.				
3 August 2011 - Trapping	Information not available.	T4 / The Grove	Mist nets including 10m high mist net, harp traps, acoustic lures	Information not available.
Comments: Seven surveyors worked on the project with assistance from a small number of staff from BSG.				
9 – 10 August 2014, Trapping	Information not available.	T1 / Fiscal Policy	Harp-trapping and mist-netting	Information not available.
Comments: Trapping 7 nights of trapping with a minimum of 6 surveyors (a number of other surveyors employed by Corylus Ecology were used as accredited agents during the trapping and for radio-tracking) between 9 th – 15 th August with radio-tracking commencing on 12 th and continuing until 22 nd August. Acoustic lures were also used on a number of evenings (not specified which).				
11 - 12 August 2014, Trapping	Information not available.	T12 / RSPB Minsmere Southwalk Belt	Harp-trapping and mist-netting	Information not available.
Comments: a minimum of 6 surveyors				
11 - 12 August 2014, Trapping	Information not available.	T2 / Northern side of Nursery Covert	Harp-trapping and mist-netting	Information not available.
Comments: a minimum of 6 surveyors				
12 – 13 August 2014, Trapping	Information not available.	T3 / Abbey Lane	Harp-trapping and mist-netting	Information not available.
Comments: a minimum of 6 surveyors				
12 – 13 August 2014, Trapping	Information not available.	T10 / Minsmere - Lane leading north from Hangman's Wood	Harp-trapping and mist-netting	Information not available.
Comments: a minimum of 6 surveyors				
13 – 14 August 2014, Trapping	Information not available.	T11 / Nursery Covert Southern track	Harp-trapping and mist-netting	Information not available.

Comments: a minimum of 6 surveyors				
13 – 14 August 2014, Trapping	Information not available.	T13 / Minsmere - North of Sheepwash Lane	Harp-trapping and mist-netting	Information not available.
Comments: a minimum of 6 surveyors				
14/08/2014	Information not available.	R25 / Minsmere – Tree roost 25 TM46625 67490	Harp-trapping, mist-netting	Information not available.
Comments: a minimum of 6 surveyors				
14/08/2014	Information not available.	R26 / Ash Wood - Tree roost 26 TM46032 65041	Harp-trapping, mist-netting	Information not available.
Comments: a minimum of 6 surveyors				
15/08/2014	Information not available.	R27 Nursery Covert - Tree roost 27 TM46404 64411	Harp-trapping, mist-netting and hand-netting	Information not available.
Comments: a minimum of 6 surveyors				
Table B				
1 – 12 June 2019 – Radio-tracking	Throughout the night and during the day to attempt to find roost locations.	N/A	Australis and Sika radio-tracking scanning receivers, Yagi rigid directional aerials. Whip omni-directional antennas, hand-held sighting compasses & GPS units.	Information not available.
Comments: 2-5 surveyors used to radio-track with both close-tracking and synchronised triangulation techniques to produce joint bearings.				
1 June – 12 June 2010 Radio- tracking	Throughout the night and during the day to attempt to find roost locations.	N/A	Australis and Sika radio-tracking scanning receivers, Yagi rigid directional aerials.	Information not available.
Comments: Between 2 and 5 surveyors; used to radio-track with both close-tracking and synchronised triangulation techniques to produce joint bearings.				
30 July – 10 August 2011 – Radio-tracking	Throughout the night and during the day to attempt to find roost locations.	N/A	Australis and Sika radio-tracking scanning receivers, Yagi rigid directional aerials. Whip omni-directional antennas, hand-held sighting compasses & GPS units.	Information not available.
Comments: Between 2 and 7 surveyors; used to radio-track with both close-tracking and synchronised triangulation techniques to produce joint bearings.				
12 – 22 August 2014	Throughout the night and during the day to attempt to find roost locations.	N/A	Australis and Sika radio-tracking scanning receivers, Yagi rigid directional aerials. Whip omni-directional antennas, hand-held sighting compasses & GPS units.	Information not available.
Comments: Between 2 and 9 surveyors used to radio-track with both close-tracking and synchronised triangulation techniques to produce joint bearings.				
2020 Static Detector Surveys				
Comments (applicable to all dates): 2 surveyors deploying detectors in one of two subsets. The detector microphones were positioned at 1–2m above the ground where possible, attached to landscape features (fence posts, trees, structures) with the microphones in a 45 degree downwards position. Where the microphones were				

positioned in linear features, the microphones were positioned at 90 degrees to the direction of the feature. Positioning of the microphones was selected to be in areas where vegetation etc would not interfere with the microphone. Subset 1: MS02, MS03, MS34, The Grove, MS06, MS07, MS05, South of Great Mount Wood, MS09, MS12, MS14, MS30, MS15, MS22. Subset 2: Lovers Lane Entrance, MS18, MS25, MS33, Aldhurst Farm, MS36, MS19, MS29, MS20, MS35, MS26, MS31, MS27, MS28				
18–25 June 2020 – static monitoring survey	Set to record sunset to sunrise.	Subset 1	SM4 Bat Detectors SMM-A2 Microphones	Information not available
9–14 July 2020 – static monitoring survey	Set to record sunset to sunrise.	Subset 2	SM4 Bat Detectors SMM-A2 Microphones	Information not available
15–22 July 2020 – static monitoring survey	Set to record sunset to sunrise.	Subset 1	SM4 Bat Detectors SMM-A2 Microphones	Information not available
23–30 July 2020 – static monitoring survey	Set to record sunset to sunrise.	Subset 2	SM4 Bat Detectors SMM-A2 Microphones	Information not available
5–11 August 2020 – static monitoring survey	Set to record sunset to sunrise.	Subset 1	SM4 Bat Detectors SMM-A2 Microphones	Information not available
13–20 August 2020 – static monitoring survey	Set to record sunset to sunrise.	Subset 2	SM4 Bat Detectors SMM-A2 Microphones	Information not available

Please provide surveyors names (*including Class Licence registration number if applicable*) and ensure the above table states the number of surveyors used for each survey visit undertaken.

Radio-tracking

- **26 – 28 May 2009** – Dr. Helen Lucking, Alastair Wrigley, Narawan Williams and Dr. Edward Bodsworth.
- **1 – 12 June 2010** – Helen Lucking, Alastair Wrigley and Geoff Billington. Total of 7 surveyors; the remaining 4 surveyors were accredit agents employed by Corylus Ecology.
- **30 July – 10 August 2011** – Helen Lucking, Geoff Billington. Total of 7 surveyors; the remaining 4 surveyors were accredit agents employed by Corylus Ecology.
- **9 – 22 August 2014** – Helen Lucking, Geoff Billington, Dr Stephanie Murphy, Paul Spencer and Alison Johnston.

Static Detector Surveys

- **18–25 June 2020** – Nick Downs and Henry Gunning.
- **9–14 July 2020** – Nick Downs and Henry Gunning.
- **15–22 July 2020** – Henry Gunning and Rob Regan.
- **23–30 July 2020** – Nick Downs and Alex Ellis MCIEEM.
- **5–11 August 2020** – Bethany Hasell QCIEEM and Rory Roche.
- **13–20 August 2020** – Nick Downs, MCIEEM (Bat survey license number 2015-11591-CLS-CLS) and Ana Pino Blanco

Please explain any constraints on the survey/s undertaken (time of year, cold weather, refused access, safety issues preventing access etc – justify as necessary and include evidence where required). If access was refused please provide evidence (letter/email) to demonstrate this.

Please refer to references [REF1-4 AND 11-16]. Limitations included (but were not limited to) occasional poor weather and access constraints.

Also complete the following:

- If DNA analysis of droppings has been undertaken, please indicate below (Yes, No, N/A) and ensure that **Figure C5b** (if applicable – see below) details the locations where the samples were taken. Where long-eared bats are detected but cannot be identified to species level visually, DNA analysis of any droppings will be needed where grey long-eared bats may be present.

DNA analysis was conducted on bat dropping samples taken from the following buildings: UAF B1, B9, B10 and Relocated Facilities B6.3 in 2019. The results indicated that the droppings from UAF B1, B9, B10 were brown long-eared bat. The results indicated that the droppings from Relocated Facilities B6.3 were common pipistrelle.

None of these buildings will be subject to any licensable activities.

- Please confirm that a walk over survey/check has been carried out within 3 months *prior* to application submission by a suitably experienced ecologist to ensure that conditions have not changed since the most recent survey was undertaken. Provide details of any changes to conditions and habitats and/or structures on site since the surveys were undertaken.

Date of walkover survey/check	11-13 May 2021.
Details of any changes to conditions and habitats and/or structures, if there are no changes please insert 'None'	All barbastelle roosts identified through radio-tracking surveys were revisited to assess whether the tree/features were still present, and a general site walkover to assess habitat suitability was conducted.

C6 Survey results: Summarise your findings in the tables below and cross reference to **Figure C6** (which must also include flight lines, access points, dimensions of existing roosts etc). If you did not undertake a specific survey type please add N/A to the relevant table/s. Raw data is to be appended to the Method Statement (including sonograms, DNA analysis results etc).

Roost types to be referenced as: *Day, Night, Feeding Perch, Transitional, Satellite, Maternity, Hibernation confirmed, Foraging Area, Commuting Route, Swarming Site, Other.* See end of document for “Definitions” of these roosts.

When completing “**Notes/observations**” include reference to direct observations, extent and age of droppings, presence of field signs, emergence or re-entry, echolocation analysis. Also include DNA results if applicable and include nil results)

Visual inspection results

Date (e.g. format 01/06/13)	Species and numbers	Roost type (to be consistent with the above listed types)	Structure reference (consistent with relevant figures and other text)	Roost location	Access points (include # of them)	Dimensions of existing roosts or explanation of where the roost is (as appropriate)
Notes/observations:						
2021	1 x <i>Pipistrellus pygmaeus</i>	Day roost	AF24	Within land associated with Upper Abbey Farm.	Hazard beam	External: 1cm, 15cm, Internal: 1.5cm, 30cm, 4cm, Smooth, Dry, Point
Notes/observations: Bat roosting within a hazard beam. Droppings had previously been identified within another feature on the same tree.						
2021	1 x <i>Myotis nattereri</i>	Hibernation roost	G136	Within Goose Hill Plantation.	Flute in stem.	External: 12cm, 4cm, Internal: 15cm, 3cm, 3cm. Rough, Dry, Point
Notes/observations: N/A						

Provide further (brief) comments/explanation if required:Tree Climbing/Ground-Level Assessment Surveys

Additional PRFs were identified during 2020/2021 surveys of the main development site (MDS) and the associated development (AD) sites. The surveys conducted in 2021 were not specifically a 'roost finding' exercise, and as such the surveys were not conducted in line with the Collins tree roost assessment surveys. Although two confirmed roosts were identified within the MDS, trees with bat roost potential have been identified that are scheduled for removal; these are considered collectively as a 'roost resource' and will be mitigated for accordingly as part of Stage 2 (previously mentioned).

Surveys undertaken in 2020 were updated in 2021, and a total of 44 and 76 trees were identified within the MDS and AD (respectively) vegetation removal zones as having moderate/high potential for roosting bats or as confirmed roosts. These trees contained an identified 76 and 167 potential roost features (PRFs) respectively.

Within the MDS, the trees identified as offering moderate or high roosting potential for bats within the vegetation removal zones were concentrated within Goose Hill Plantation, and within habitat features to the west of the Scheme. During the 2020 surveys of all trees within the red line boundary, Goose Hill Plantation was found to support proportionately lower numbers of trees with PRFs, when compared to Kenton Hills, Fiscal Policy and Abbey Cottage woodlands. Along the northern edge of Kenton Hills and within Fiscal Policy and Abbey Cottage woodlands. Within Goose Hill Plantation, the trees with potential to support bats were located in clustered areas, particularly within the south-eastern area of Goose Hill. The other areas of Goose Hill were largely formed of young pine plantation and had low relative numbers of trees that supported PRFs.

In the AD sites, most of the trees supporting bat roost value were encompassed within the Two Village Bypass and Sizewell Link Road sites.

Dusk survey results

Date (e.g. format 01/06/13)	Start and end times	Species and numbers	Roost type (to be consistent with the above listed types)	Structure reference (consistent with relevant figures and other text)	Roost location	Access points (include # of them)	Dimensions of existing roosts or explanation of where the roost is (as appropriate)
Notes/observations: N/A							

Provide further (brief) comments/explanation if required:

N/A

Dawn Survey results

Date (e.g. format 01/06/13)	Start and end times	Species and numbers	Roost type (to be consistent with the above listed types)	Structure reference (consistent with relevant figures and other text)	Roost location	Access points (include # of them)	Dimensions of existing roosts or explanation of where the roost is (as appropriate)
Notes/observations: N/A							

Provide further (brief) comments/explanation if required:

N/A

'Other' results – please specify.

Date (e.g. format 01/06/13)	Species and numbers	Roost type (to be consistent with the above listed types)	Structure reference (consistent with relevant figures and other text)	Roost location	Access points (include # of them)	Dimensions of existing roosts or explanation of where the roost is (as

						appropriate)
Back-Tracking Surveys						
23/06/20 – 24/06/20	Barbastelle, unknown numbers	Foraging area	Crossroads between Hilltop Covert and Goose Hill Plantation	Foraging activity at TM4645564502	N/A	N/A
Notes/observations:						
14/07/20 – 15/07/20	2 x <i>Pipistrellus</i> spp.	Summer day roost	Walk barn	TM4663065079	Unknown.	Unknown.
Notes/observations:						
05/08/20 – 06/08/20	1 x <i>Pipistrellus pygmaeus</i>	Unknown, unconfirmed.	Kenton Hills	TM4607864392	Unknown.	Unknown.
Notes/observations: Bat repeatedly flying around a small area of trees at dawn, tracked back to a location along the north of Kenton Hills. Surveyors did not see it enter roost.						
05/08/20 – 06/08/20	2 x <i>Plecotus auritus</i>	Unknown, unconfirmed	Goose Hill Plantation	TM4641564569	N/A	N/A
Notes/observations: Two brown long-eared bats were recorded flying around a small area of trees at dawn (within an area to the south of Goose Hill proposed to be retained during development). Surveyors did not see bats enter roost.						
05/08/20 – 06/08/20	Barbastelle, unknown numbers	Commuting route	Nursery Covert/Turf Pits	N/A	N/A	N/A
Notes/observations: Surveyors deployed in a line along the north-western edge of Nursey Covert to the north edge of Turf Pits observed barbastelle at dusk flying from the south-west (Kenton Hills direction) and they flew in the opposite direction back at dawn.						
02/09/20 - 03/09/20	1 x <i>Pipistrellus pipistrellus</i>	Unknown, unconfirmed	Goose Hill Plantation	TM 47014 64624	Unknown.	Unknown.
Notes/observations: Single common pipistrelle repeatedly flying around a small group of trees. Not observed returning to its roost but thought to be within 50m of the grid reference provided.						
02/09/20 - 03/09/20	Barbastelle, unknown numbers	Commuting route	Southern edge of Goose Hill Plantation	Unknown.	Unknown.	Unknown.
Notes/observations: Surveyors deployed in a line along the south/south-western edge of Goose Hill Plantation. The eastern most surveyor recorded a barbastelle, but no other surveyors did.						
22/06/20 – 23/06/20	<i>Pipistrellus pygmaeus</i>	Unconfirmed but potential maternity roost.	Old Abbey Farm building complex.	Unknown.	Unknown.	Unknown.
Notes/observations: Maternity roost of common pipistrelle very likely to be present within the Old Abbey Farm building complex (observed from a distance as did not have land access, hence did not see bats emerge or re-enter roost).						
22/06/20 – 23/06/20	<i>Pipistrellus pygmaeus</i>	Foraging area	N/A	Track between Fiscal Policy and Upper Abbey Farm	N/A	N/A
Notes/observations: N/A						
22/06/20 – 23/06/20	<i>Pipistrellus pygmaeus</i>	Commuting route	N/A	Fiscal Policy/Leiston Carr	N/A	N/A
Notes/observations: Common pipistrelle commuting line along the northern edge of Fiscal Policy/Leiston Carr.						
15/06/2020 – 16/06/2020	At least 10 x <i>Plecotus auritus</i>	Maternity roost	Bat box 2 – Leiston Carr	Leiston Carr	Bat box	Unknown
Notes/observations: Bat box checked following dawn survey, contained at least 10 brown long-eared bats, including at least one pup.						
15/06/2020 – 16/06/2020	<i>Pipistrellus</i> sp.	Unknown	Fiscal Policy	Near mast	Unknown	Unknown
Notes/observations: A single swarming pipistrelle at dawn, around a group of mature pines near the mast. It is likely that one of these trees is a roost, although the bat was not seen entering.						

15/06/2020 – 16/06/2020	1 x <i>Eptesicus serotinus</i>	Foraging area	Fiscal Policy	Location of new access road	N/A	N/A
Notes/observations: A single serotine repeatedly foraging within the field along the northern boundary of Fiscal Policy.						
03/08/2020 – 04/08/2020	2 x <i>Pipistrellus pygmaeus</i>	Unconfirmed, unknown	Fiscal Policy	Near mast	N/A	N/A
Notes/observations: Two soprano pipistrelles were recorded circling around a group of trees near the mast (field side) very early at dusk, and very late at dawn. Not seen emerging/re-entering, but roost must be close.						
01/09/2020 – 02/01/2020	2 x bats. Unknown species, likely to be <i>Pipistrellus</i> spp.	Unconfirmed, unknown	Leiston Carr	TM45626639 50	Unknown	Unknown
Notes/observations: Two bats seen near the Leiston Carr bat box early in the dusk survey. They were flying around a distinct group of trees (probable roost location) – likely to be pipistrelle but not heard on detector.						
01/09/2020 – 02/09/2020	1 x barbastelle	Foraging area	Fiscal Policy	East of mast	Unknown	Unknown
Notes/observations: A foraging barbastelle was recorded (and seen) within the sugar beet field east of the mast for a significant percentage of the dusk survey (it was still present when the survey finished).						
Bat Box Checks						
6/08/2020	Unconfirmed, likely <i>Pipistrellus</i> sp.	Unknown	Kenton Hills – Box 17	TM46250640 69	Bat box	Unknown
Notes/observations: Empty bat box, but smelt typical of soprano pipistrelle.						
6/08/2020	Unconfirmed, likely <i>Pipistrellus pygmaeus</i>	Unknown	Kenton Hills – Box 21	TM46200641 24	Bat box	Unknown
Notes/observations: Small amount of pipistrelle droppings (approximately 5g) – likely soprano pipistrelle.						
6/08/2020	Unconfirmed, likely <i>Pipistrellus pygmaeus</i>	Unknown	Kenton Hills – Box 20A	TM46200641 24	Bat box	Unknown
Notes/observations: Small amount of pipistrelle droppings (approximately 15g) – likely soprano pipistrelle.						
6/08/2020	1 x <i>Myotis nattereri</i>	Likely summer day roost	Kenton Hills – Box 32	TM46083643 06	Bat box	Unknown
Notes/observations: One adult female Natterer's bat.						
6/08/2020	Possible <i>Myotis nattereri</i>	Unconfirmed, unknown	Kenton Hills – Box 37	TM46060 64349	Bat box	Unknown
Notes/observations: Bird droppings, but the box had a typical Natterer's bat smell.						
6/08/2020	1 x <i>Pipistrellus pipistrellus</i>	Likely summer day roost	Kenton Hills – Box 33	TM46128 64269	Bat box	Unknown
Notes/observations: One male common pipistrelle present within the bat box.						
06/08/2020	<i>Pipistrellus</i> sp.	Unknown	Kenton Hills – Box 24	TM46128642 69	Bat box	Unknown
Notes/observations: Approximately 6 fresh pipistrelle droppings.						
06/08/2020	30 – 40 x <i>Myotis nattereri</i>	Maternity roost	Kenton Hills – Box 22	TM46208641 37	Bat box	Unknown
Notes/observations: N/A						
06/08/2020	30 – 40 <i>Myotis nattereri</i>	Maternity roost	Kenton Hills – Box 23	TM46208641 37	Bat box	Unknown
Notes/observations: N/A						
06/08/2020	Unknown	Unknown	Kenton Hills – Box 24	TM46208641 37	Bat box	Unknown
Notes/observations: Approximately 3 cm deep with old bat droppings.						
06/08/2020	10 x <i>Myotis nattereri</i>	Maternity roost	Kenton Hills – Box 28	TM46208641	Bat box	Unknown
Notes/observations: Approximately 10 Natterer's bats. Not bats previously disturbed as they were all semi-torpid.						
06/08/2020	1 x dead <i>Myotis nattereri</i>	Unknown	Kenton Hills – unnamed	TM46155642 20	Bat box	Unknown
Notes/observations: One dead Natterer's bat, plus approximately 13mm deep layer of droppings.						

06/08/2020	2 x <i>Pipistrellus pygmaeus</i>	Unknown	Kenton Hills – unnamed	TM46132641 50	Bat box	Unknown
Notes/observations: Contained two adult soprano pipistrelle, one male and one female.						
06/08/2020	Approx. 50 x <i>Myotis nattereri</i>	Maternity roost	Kenton Hills – unnamed	TM46202641 33	Bat box	Unknown
Notes/observations: Contained 50 Natterer's bats. South-east facing bat box.						
06/08/2020	1 x <i>Pipistrellus pipistrellus</i>	Likely summer day roost	Kenton Hills – unnamed	TM46213641 14	Bat box	Unknown
Notes/observations: Contained 1 adult male common pipistrelle.						
Trapping						
26/05/2009	2x <i>Barbastella barbastellus</i> , 1x <i>Myotis nattereri</i> , 1x <i>Myotis</i> sp., 2x <i>Myotis daubentonii</i> , 4x <i>Pipistrellus pipistrellus</i> 8x <i>Pipistrellus pygmaeus</i>	N/A	N/A	Within plantation woodland around Fiscal Policy, TM45387 63962	N/A	N/A
Notes/observations:						
27/05/2009	2x <i>Barbastella barbastellus</i> , 1x <i>Plecotus auritus</i> , 1x <i>Myotis nattereri</i> , 4x <i>Pipistrellus pipistrellus</i> , 8x <i>Pipistrellus pygmaeus</i>	N/A	N/A	Nursery Covert, TM46210 64418	N/A	N/A
Notes/observations:						
28/05/2009	1x <i>Barbastella barbastellus</i> , 1x <i>Plecotus auritus</i> , 2x <i>Myotis nattereri</i> , 4x <i>Pipistrellus pipistrellus</i>	N/A	N/A	Within plantation woodland around Fiscal Policy, approx. TM 45360 64012	N/A	N/A
Notes/observations:						
01/06/2010	6x <i>Pipistrellus pygmaeus</i> , 15x <i>Pipistrellus pipistrellus</i> , 4x <i>Barbastella barbastellus</i> , 2x <i>Myotis nattereri</i> , 1x <i>Plecotus auritus</i>	N/A	T1	Fiscal Policy	N/A	N/A
Notes/observations:						
02/06/2010	5x <i>Pipistrellus pygmaeus</i> , 6x <i>Pipistrellus pipistrellus</i> , 1x <i>Barbastella barbastellus</i> ,	N/A	T2	Nursery Covert/Turf Pits	N/A	N/A

	1x <i>Myotis nattereri</i>					
Notes/observations:						
02/06/2010	1x <i>Barbastella barbastellus</i>	N/A	R1	East-west track of Kenton Hills, tree roost	N/A	N/A
Notes/observations:						
03/06/2010	4x <i>Pipistrellus pygmaeus</i> , 7x <i>Pipistrellus pipistrellus</i> 4x <i>Plecotus auritus</i> 3x <i>Myotis nattereri</i> 1x <i>Eptesicus serotinus</i>	N/A	T3	Upper Abbey Track	N/A	N/A
Notes/observations:						
04/06/2010	2x <i>Pipistrellus pygmaeus</i> , 2x <i>Pipistrellus pipistrellus</i> 1x <i>Plecotus auritus</i> 6x <i>Myotis nattereri</i> 2x <i>Nyctalus noctula</i>	N/A	T4	The Grove	N/A	N/A
Notes/observations:						
05/06/2010	1x <i>Pipistrellus</i> sp., 6x <i>Pipistrellus pygmaeus</i> 4x <i>Pipistrellus pipistrellus</i> 5x <i>Myotis nattereri</i> 7x <i>Plecotus auritus</i>	N/A	T1	Fiscal Policy	N/A	N/A
Notes/observations:						
05/06/2010	2x <i>Barbastella barbastellus</i>		R3	Tree roost, Ash Wood	N/A	N/A
Notes/observations:						
06/06/2010	3x <i>Pipistrellus pygmaeus</i> , 4x <i>Pipistrellus pipistrellus</i>	N/A	T6 and R7	Broom Covert and Tree roost 7 (in the Grove)	N/A	N/A
Notes/observations:						
07/06/2010	4x <i>Pipistrellus</i> sp., 40x <i>Pipistrellus pygmaeus</i> , 17x <i>Pipistrellus pipistrellus</i> , 1x <i>Myotis nattereri</i> , 1x <i>Myotis daubentonii</i>	N/A	T7	Sandy Lane	N/A	N/A
Notes/observations:						
07/06/2010	3x <i>Barbastella barbastellus</i>	N/A	R8	The Grove, tree roost	N/A	N/A
Notes/observations:						

08/06/2010	3x <i>Pipistrellus pygmaeus</i> , 3x <i>Pipistrellus pipistrellus</i> , 1x <i>Myotis nattereri</i> , 1x <i>Barbastella barbastellus</i>	N/A	T2	Nursery Covert/Turf Pits	N/A	N/A
Notes/observations:						
30/07/2011	19x <i>Pipistrellus pygmaeus</i> , 15x <i>Pipistrellus pipistrellus</i> , 1x <i>Plecotus auritus</i> , 5x <i>Myotis nattereri</i> , 1x <i>Pipistrellus nathusii</i> , 1x <i>Eptesicus serotinus</i>	N/A	T1	Fiscal Policy	N/A	N/A
Notes/observations:						
31/07/2011	17x <i>Pipistrellus pygmaeus</i> , 5x <i>Pipistrellus pipistrellus</i> , 5x <i>Barbastella barbastellus</i> , 6x <i>Plecotus auritus</i> , 9x <i>Myotis nattereri</i>	N/A	T2 and T8	Turf Pits	N/A	N/A
Notes/observations:						
01/08/2011	7x <i>Pipistrellus pygmaeus</i> , 3x <i>Myotis nattereri</i> , 1x <i>Barbastella barbastellus</i> , 2x <i>Plecotus auritus</i>	N/A	T3	Upper Abbey Track	N/A	N/A
Notes/observations:						
02/08/2011	1x <i>Barbastella barbastellus</i>	N/A	R14	Ash wood tree roost	N/A	N/A
Notes/observations:						
02/08/2011	6x <i>Pipistrellus pygmaeus</i> , 4x <i>Pipistrellus pipistrellus</i> , 7x <i>Plecotus auritus</i> , 3x <i>Myotis nattereri</i> , 1x <i>Barbastella barbastellus</i> , 8x <i>Eptesicus serotinus</i>	N/A	N/A	Sandlings Walk	N/A	N/A
Notes/observations:						
03/08/2011	11x <i>Barbastella barbastellus</i>	N/A	R9	Ash Wood tree roost	N/A	N/A
Notes/observations:						
03/08/2011	6x <i>Myotis nattereri</i> , 2x	N/A	T4	The Grove	N/A	N/A

	<i>Pipistrellus pygmaeus</i> , 4x <i>Plecotus auritus</i>					
Notes/observations:						
09/08/2014	5x <i>Pipistrellus pygmaeus</i> , 7x <i>Pipistrellus pipistrellus</i> 4x <i>Myotis nattereri</i> 1x <i>Barbastella barbastellus</i> 1x <i>Plecotus auritus</i> 1x <i>Myotis daubentonii</i>	N/A	T1	Fiscal Policy	N/A	N/A
Notes/observations:						
10/08/2014	1x <i>Pipistrellus pygmaeus</i> , 1x <i>Pipistrellus pipistrellus</i>	N/A	T1	Fiscal Policy	N/A	N/A
Notes/observations:						
11/08/2014	27x <i>Pipistrellus pygmaeus</i> , 1x <i>Barbastella barbastellus</i> , 5x <i>Myotis daubentonii</i> , 1x <i>Plecotus auritus</i>	N/A	T12	RSPB Minsmere Southwalk Belt	N/A	N/A
Notes/observations:						
12/08/2014	29x <i>Pipistrellus pygmaeus</i> , 1x <i>Plecotus auritus</i> 3x <i>Myotis nattereri</i> 2x <i>Myotis daubentonii</i>	N/A	T12	RSPB Minsmere Southwalk Belt	N/A	N/A
Notes/observations:						
11/08/2014	1x <i>Pipistrellus pygmaeus</i> , 4x <i>Pipistrellus pipistrellus</i> 5x <i>Barbastella barbastellus</i> 2x <i>Myotis nattereri</i> 1x <i>Plecotus auritus</i>	N/A	T2	Northern side of Nursery Covert	N/A	N/A
Notes/observations:						
12/08/2014	5x <i>Pipistrellus pygmaeus</i> , 3x <i>Barbastella barbastellus</i> , 3x <i>Myotis nattereri</i> , 3x <i>Plecotus auritus</i>	N/A	T2	Northern side of Nursery Covert	N/A	N/A
Notes/observations:						
12/08/2014	16x <i>Pipistrellus pipistrellus</i> , 5x <i>Myotis nattereri</i>	N/A	T3	Abbey Lane	N/A	N/A

	1x <i>Myotis daubentonii</i> 1x <i>Eptesicus serotinus</i> 1x <i>Plecotus auritus</i>					
Notes/observations:						
13/08/2014	5x <i>Pipistrellus pipistrellus</i> , 1x <i>Barbastella barbastellus</i> , 1x <i>Plecotus auritus</i> , 1x <i>Myotis nattereri</i>	N/A	T3	Abbey Lane	N/A	N/A
Notes/observations:						
12/08/2014	52x <i>Pipistrellus pygmaeus</i> , 3x <i>Barbastella barbastellus</i> 1x <i>Nyctalus noctula</i> 2x <i>Myotis nattereri</i>	N/A	T10	Minsmere - Lane leading north from Hangman's Wood	N/A	N/A
Notes/observations:						
13/08/2014	31x <i>Pipistrellus pygmaeus</i> , 2x <i>Plecotus auritus</i> , 4x <i>Barbastella barbastellus</i> , 1x <i>Myotis nattereri</i>	N/A	T10	Minsmere - Lane leading north from Hangman's Wood	N/A	N/A
Notes/observations:						
13/08/2014	2x <i>Pipistrellus pipistrellus</i> , 2x <i>Barbastella barbastellus</i> 1x <i>Myotis nattereri</i>	N/A	T11	Nursery Covert Southern track	N/A	N/A
Notes/observations:						
14/08/2014	4x <i>Pipistrellus pygmaeus</i> , 2x <i>Pipistrellus pipistrellus</i> 2x <i>Barbastella barbastellus</i> 1x <i>Myotis nattereri</i> 2x <i>Plecotus auritus</i>	N/A	T11	Nursery Covert Southern track	N/A	N/A
Notes/observations:						
13/08/2014	5x <i>Pipistrellus pygmaeus</i> , 3x <i>Myotis nattereri</i>	N/A	T13	Mm - North of Sheepwash Lane	N/A	N/A
Notes/observations:						
14/08/2014	7x <i>Pipistrellus pygmaeus</i> , 2x <i>Nyctalus noctule</i> , 1x <i>Myotis nattereri</i>	N/A	T13	Mm - North of Sheepwash Lane	N/A	N/A
Notes/observations:						

14/08/2014	2x <i>Barbastella barbastellus</i>	N/A	R25	Minsmere – Tree Roost 25	N/A	N/A
Notes/observations:						
15/08/2014	3x <i>Barbastella barbastellus</i>	N/A	R27	SZC - Tree Roost 27 Nursery Covert	N/A	N/A
Radio-tracking						
02/06/2010	2x <i>Barbastella barbastellus</i>	Maternity roost	R1	East-west track, TM 45620 64130	Rotten branch c.5m high with flaking bark on branch and trunk of an oak.	N/A
03/06/2010	1x <i>Barbastella barbastellus</i>	Maternity roost	R2	East-west track, TM 45740 65200	Split bark on forked limb SSE facing - c.4m high on oak tree.	N/A
03/06/2010	2x <i>Barbastella barbastellus</i>	Maternity roost	R3	Ash Wood, TM 45740 65200	Peeling bark on northern forked limb (4-8m high) on an oak tree.	N/A
04/06/2010	3x <i>Barbastella barbastellus</i>	Maternity roost	R3	Ash Wood, TM 45740 65200	As above.	N/A
05/06/2010	3x <i>Barbastella barbastellus</i>	Maternity roost	R3	Ash Wood, TM 45740 65200	As above.	N/A
03/06/2010	1x <i>Barbastella barbastellus</i>	Maternity roost	R4	Grimseys, TM 46873 64159	N/A - exact roost location not known.	N/A
08/06/2010	1x <i>Barbastella barbastellus</i>	Maternity roost	R4	Grimseys, TM 46873 64159	As above.	N/A
04/06/2010	1x <i>Barbastella barbastellus</i>	Maternity roost	R5	The Grove, TM 46710 65200	Flaking bark on oak vertical stem c.3-6m high.	N/A
06/06/2010, 08/06/2010	1x <i>Barbastella barbastellus</i>	Maternity roost	R6	Greenhouse Plantation, TM 44760 64660	Dead flaking bark on trunk, c.7m high.	N/A
06/06/2010	1x <i>Barbastella barbastellus</i>	Maternity roost	R7	The Grove, TM 46722 65216	Many potential features, main feature where bats roosting is torn off limb on north side of oak, c.10m high.	N/A
07/06/2010	1x <i>Barbastella barbastellus</i>	Maternity roost	R8	The Grove, TM 46677 65254	Several access holes, loose bark below split limb on eastern side of oak, height of 3m.	N/A
09/06/2010	2x <i>Barbastella barbastellus</i>	Maternity roost	R9	Ash Wood, TM 45999	Oak tree with multiple	N/A

				65205	features - splitting limbs and loose bark towards top of tree, cracks in bark lower down and woodpecker hole, 6-8m high.	
10/06/2010, 11/06/2010	1x <i>Barbastella barbastellus</i>	Unknown	R10	Wood Farm Barn, TM 43657 63043	Timber weatherboarding / corrugated metal roof.	N/A
10/06/2010	1x <i>Barbastella barbastellus</i>	Unknown	R11	Nursery Covert, TM 46373 64573	Loose bark towards top of tree and woodpecker hole on south face (c.4m high) on dead elm.	N/A
10/06/2010	1x <i>Barbastella barbastellus</i>	Maternity roost	R12	Hangman's Wood, TM 45156 66900	Oak tree with multiple features, splits and fissures and large cavity and split on the face of the main stem.	N/A
11/06/2010, 12/06/2010	2x <i>Barbastella barbastellus</i>	Maternity roost	R13	Ash Wood, TM 45716 65153	Split horizontal limb on oak that extends north from main stem at 5m high and upwards.	N/A
Notes/observations:						
02/08/2011	3x <i>Barbastella barbastellus</i>	Maternity roost	R9	Ash Wood, TM 45999 65205	Oak tree with multiple features - splitting limbs and loose bark towards top of tree, cracks in bark lower down and woodpecker hole, 6-8m high.	N/A
03/08/2011	4x <i>Barbastella barbastellus</i>	Maternity roost	R9	Ash Wood, TM 45999 65205	As above.	N/A
04/08/2011	3x <i>Barbastella barbastellus</i>	Maternity roost	R9	Ash Wood, TM 45999 65205	As above.	N/A
05/08/2011	1x <i>Barbastella barbastellus</i>	Maternity roost	R9	Ash Wood, TM 45999 65205	As above.	N/A
04/08/2021	3x <i>Barbastelle</i>	Maternity	R13	Ash Wood,	As above.	N/A

	<i>barbastellus</i>	roost		TM 45716 65153		
01/08/2011, 02/08/2011	2x <i>Barbastella barbastellus</i>	Maternity roost	R14	Ash Wood, TM 45737 65171	As above.	N/A
01/08/2011	1x <i>Barbastella barbastellus</i>	Maternity roost	R15	Nursery Covert, TM 46346 64484	Numberous woodpecker holes on <i>Pinus</i> sp.	N/A
01/08/2011	1x <i>Barbastella barbastellus</i>	Unknown roost	R16	Kenton Hills, TM 46262 64009	<i>Salix</i> . sp with 2x snapped off limbs, one with woodpecker holes on north face.	N/A
03/08/2011	1x <i>Barbastella barbastellus</i>	Unknown roost	R17	Plantation Cottages, TM 45605 65740	Sweet chestnut with lots of dead wood and loose bark on both stems. Two w/p holes on face of north stem. Signal strongest 8- 10m of north stem. Loose plate of bark. Loose bark all way to base on face of north stem.	N/A
04/08/2011	7x <i>Barbastella barbastellus</i>	Maternity roost	R17	Plantation Cottages, TM 45605 65740	As above.	N/A
05/08/2011	4x <i>Barbastella barbastellus</i>	Maternity roost	R17	Plantation Cottages, TM 45605 65740	As above.	N/A
06/08/2011	6x <i>Barbastella barbastellus</i>	Maternity roost	R17	Plantation Cottages, TM 45605 65740	As above.	N/A
07/08/2011, 08/08/2011	3x <i>Barbastella barbastellus</i>	Unknown roost	R17	Plantation Cottages, TM 45605 65740	As above.	N/A
09/08/2011, 10/08/2011	1x <i>Barbastella barbastellus</i>	Unknown roost	R17	Plantation Cottages, TM 45605 65740	As above.	N/A
11/08/2011	2x <i>Barbastella barbastellus</i>	Maternity roost	R17	Plantation Cottages, TM 45605 65740	As above.	N/A
04/08/2011	2x <i>Barbastella barbastellus</i>	Maternity roost	R18	Kenton Hills, TM 46110 64073	Oak tree with large split in snapped limb, dead wood and loose bark.	N/A
05/08/2011	7x <i>Barbastella barbastellus</i>	Maternity roost	R19	Plantation Cottages, TM 45710 65786	Oak tree, likely access point is large snapped limb with horizontal	N/A

					split at 8m. Also snapped limb at c. 4-6m high.	
05/08/2011	2x <i>Barbastella barbastellus</i>	Maternity roost	R20	East-west track, TM 45650 64159	Dying sweet chestnut with split limb on east face.	N/A
06/08/2011	5x <i>Barbastella barbastellus</i>	Maternity roost	R21	Old Abbey Farm Woodland, TM 45088 64133	Large vertical split from 9-13m on oak.	N/A
07/08/2011, 08/08/2011	1x <i>Barbastella barbastellus</i>	Maternity roost	R21	Old Abbey Farm Woodland, TM 45088 64133	As above.	N/A
09/08/2011, 10/08/2011	3x <i>Barbastella barbastellus</i>	Maternity roost	R21	Old Abbey Farm Woodland, TM 45088 64133	As above.	N/A
11/08/2011	2x <i>Barbastella barbastellus</i>	Unknown roost	R21	Old Abbey Farm Woodland, TM 45088 64133	As above.	N/A
06/08/2011 - 11/08/2011	1x <i>Barbastella barbastellus</i>	Unknown roost	R22	Hill Farm, Barn, TM 44042 64494	Concrete breeze block and corrugated sheet modern agricultural barn. Strongest signal NE corner.	N/A
31/07/2011, 01/08/2011	2x <i>Myotis nattereri</i>	Maternity roost	RA	Leiston Abbey ruins, TM 44494 64174	N/A	N/A
02/08/2011 - 07/08/2011	1x <i>Myotis nattereri</i>	Unknown roost	RA	Leiston Abbey ruins, TM 44494 64174	N/A	N/A
01/08/2011	1x <i>Plecotus auritus</i>	Maternity roost	RB	Area towards the north of Rookyard wood, TM 46701 63305	Unknown specific roost.	N/A
02/08/2011 - 09/08/2011	1x <i>Plecotus auritus</i>	Maternity roost	RC	Small, brick bungalow, TM 47322 62338	N/A	N/A
04/08/2021 - 11/08/2011	1x <i>Myotis nattereri</i>	Unknown roost	RD	Bat box fixed to pine tree, TM 46254 64069	Bat box	N/A
04/08/2011, 05/08/2011, 08/08/2011	1x <i>Myotis nattereri</i>	Maternity roost	RE	Sandpytle Plantation, TM 46321 65983	Wet woodland with willow, alder and bracken understorey. Oak standards towards edge.	N/A

					Large wound at c.5m one face. Looks like old snapped limb. Unclear how far cavity extends but lots of dead and rotting wood.	
07/08/2011, 09/08/2011 - 11/08/2011	1x <i>Myotis nattereri</i>	Maternity roost	RF	The Grove - On the eastern edge of the grove woodland on the eastern bank of the stream, TM 46749 65225	Mature oak with three w/p holes at 5-10m on s face and one further hole on north face.	N/A
Notes/observations:						
12/08/2014, 13/08/2014	1x <i>Barbastella barbastellus</i>	Maternity roost	R23	Sizewell: The Grove - eastern side northern end, TM46438 65519	Large expanses of lifted bark with few holes on north-east and northwest side 6-7m high on dead alder (<i>Alnus glutinosa</i>).	N/A
13/08/2014	1x <i>Barbastella barbastellus</i>	Maternity roost	R24	Minsmere: Scottshall Covert. East of main ride, TM46785 67324	Large split down entire south face plus loose bark signal strongest and mid-point at 6m on Pedunculate Oak (<i>Quercus robur</i>).	N/A
18/08/2014 - 21/08/2014	2x <i>Barbastella barbastellus</i>	Maternity roost	R24	Minsmere: Scottshall Covert. East of main ride, TM46785 67324	As above.	N/A
13/08/2014	2x <i>Barbastella barbastellus</i>	Maternity roost	R25	Minsmere: Scottshall Covert. West of main ride, TM46625 67490	Large standard; 3 main central limbs. The middle limb has loose bark on west and SW-face signal strong here near a dead pole; (snapped) loose bark on Pedunculate Oak (<i>Quercus robur</i>) (20m+	N/A

					high).	
14/08/2014	1x <i>Barbastella barbastellus</i>	Maternity roost	R25	Minsmere: Scottshall Covert. West of main ride, TM46625 67490	As above.	N/A
13/08/2014	1x <i>Barbastella barbastellus</i>	Maternity roost	R26	Sizewell: Ash wood. South-east corner next just north of Ash Wood Cottage, TM46032, 65041	Woodpecker hole and loose bark on north-west face; feature runs 2m in length, 6m high on Pedunculate Oak.	N/A
14/08/2014	5x <i>Barbastella barbastellus</i>	Maternity roost	R26	Sizewell: Ash wood. South-east corner next just north of Ash Wood Cottage, TM46032, 65041	As above.	N/A
15/08/2014	2x <i>Barbastella barbastellus</i>	Maternity roost	R26	Sizewell: Ash wood. South-east corner next just north of Ash Wood Cottage, TM46032, 65041	As above.	N/A
13/08/2014	1x <i>Barbastella barbastellus</i>	Maternity roost	R27	Sizewell: Nursery Covert. North-west corner at the edge of track near bend of woodland ride, TM46404, 64411	Dead pole, decay holes, missing loose bark. Roost holes on NNW face on dead Scots pine pole (<i>Pinus sylvestris</i>).	N/A
14/08/2014	3x <i>Barbastella barbastellus</i>	Maternity roost	R27	Sizewell: Nursery Covert. North-west corner at the edge of track near bend of woodland ride, TM46404, 64411	As above.	N/A
15/08/2014	4x <i>Barbastella barbastellus</i>	Maternity roost	R27	Sizewell: Nursery Covert. North-west corner at the edge of track near bend of	As above.	N/A

				woodland ride, TM46404, 64411		
16/08/2014	6x <i>Barbastella barbastellus</i>	Maternity roost	R27	Sizewell: Nursery Covert. North-west corner at the edge of track near bend of woodland ride, TM46404, 64411	As above.	N/A
17/08/2014	7x <i>Barbastella barbastellus</i>	Maternity roost	R27	Sizewell: Nursery Covert. North-west corner at the edge of track near bend of woodland ride, TM46404, 64411	As above.	N/A
18/08/2014 - 20/08/2014	6x <i>Barbastella barbastellus</i>	Maternity roost	R27	Sizewell: Nursery Covert. North-west corner at the edge of track near bend of woodland ride, TM46404, 64411	As above.	N/A
21/08/2014	4x <i>Barbastella barbastellus</i>	Maternity roost	R27	Sizewell: Nursery Covert. North-west corner at the edge of track near bend of woodland ride, TM46404, 64411	As above.	N/A
23/08/2014	3x <i>Barbastella barbastellus</i>	Maternity roost	R27	Sizewell: Nursery Covert. North-west corner at the edge of track near bend of woodland ride, TM46404, 64411	As above.	N/A
14/08/2014, 18/08/2014 - 23/08/2014	1x <i>Barbastella barbastellus</i>	Maternity roost	R28	Minsmere: Located on the western edge of Scottshall Covert wood,	Pedunculate oak approximately 10m high, single stem and intact;	N/A

				TM46447 67427	there are multiple areas of lifted bark on the north face of the stem between 6m and 8m; signal strongest at this point.	
15/08/2014	3x <i>Barbastella barbastellus</i>	Maternity roost	R28	Minsmere: Located on the western edge of Scottshall Covert wood, TM46447 67427	As above.	N/A
16/08/2014, 17/8/2014	2x <i>Barbastella barbastellus</i>	Maternity roost	R28	Minsmere: Located on the western edge of Scottshall Covert wood, TM46447 67427	As above.	N/A
15/08/2014	1x <i>Barbastella barbastellus</i>	Unknown roost	R29	Minsmere: Located on the northern edge on Scottshall Covert towards the eastern side, right on edge of woodland with open grassland to the north, TM46899 67439	Pedunculate oak, top of the tree at approximately 8m high snapped off completely; lifted bark from 4m high on the stem to the top on the southern face of the tree, facing the woodland. The signal was strongest from the lifted bark at approx. 6m high.	N/A
16/08/2014, 17/8/2014	1x <i>Barbastella barbastellus</i>	Unknown roost	R30	Minsmere: Scottshall Covert – north-west corner, TM46522 67465	A large split on Pedunculate oak that runs the entire length of the stem, caused by possible lightning strike. Tag signal was strongest approximately 9m high on main stem and on the northern face.	N/A
23/08/2014	2x <i>Barbastella</i>	Maternity	R31	Minsmere:	Top of a	N/A

	<i>barbastellus</i>	roost		Scottshall Covert. West of main ride near Sheepwash Lane, TM46645 67292	Pedunculate oak, 12m high, within a large branch that extends to the north: this limb has split with raised bark.	
17/08/2014, 18/08/2014	1x <i>Barbastella barbastellus</i>	Maternity roost	R32	Restricted access, exact location not known - Area north of Lower Abbey, approx. TM 45624 65898	N/A - unknown due to restricted access.	N/A
19/08/2014, 20/08/2014	2x <i>Barbastella barbastellus</i>	Maternity roost	R32	Restricted access, exact location not known - Area north of Lower Abbey, approx. TM 45624 65898	N/A - unknown due to restricted access.	N/A
21/08/2014	4x <i>Barbastella barbastellus</i>	Maternity roost	R32	Restricted access, exact location not known - Area north of Lower Abbey, approx. TM 45624 65898	N/A - unknown due to restricted access.	N/A
18/08/2014, 19/08/2014	1x <i>Barbastella barbastellus</i>	Unknown roost	R33	Restricted access, exact location not known - Redhouse Farm Saxmundham, approx. TM 41052 63253	N/A - unknown due to restricted access.	N/A
14/08/2014 - 16/08/2014, 21/08/2014	1x <i>Barbastella barbastellus</i>	Unknown roost	R34	Restricted access, exact location not known - New Plantation - Saxmundham, approx TM 39964 63268	N/A - unknown due to restricted access.	N/A
12/08/2014	1x <i>Barbastella barbastellus</i>	Unknown roost	R35	Restricted access, exact location not known - Sizewell: Grimseys, approx. TM 46653 64078	N/A - unknown due to restricted access.	N/A
13/08/2014, 14/08/2014, 16/08/2014 - 19/08/2014,	1x <i>Barbastella barbastellus</i>	Unknown roost	R36	Restricted access, exact location not known -	N/A - unknown due to restricted access.	N/A

21/08/2014				Sizewell: North Grimseys, approx. TM 46653 64078		
17/08/2014	1x <i>Barbastella barbastellus</i>	Maternity roost	R37	Restricted access, exact location not known - Close to Reckford Bridge/Eastbri dge Marshes and East of Middleton, approx. TM 43884 67702	N/A - unknown due to restricted access.	N/A
Notes/observations:						
Automated Detector Monitoring						
06 – 09/2020	<i>Barbastella barbastellus</i> , <i>Nyctalus noctula</i> , <i>Pipistrellus pipistrellus</i> , <i>Pipistrellus pygmaeus</i>	N/A	Aldhurst Farm	N/A	N/A	N/A
Notes/observations: Total of 736 and 91 bat passes in June and July respectively, and an average of 11 bat passes per hour (pph). Of these bat passes, 90.6% were common or soprano pipistrelle, and 9.4% were rarer bat species.						
06 – 09/2020	<i>Nyctalus noctula</i> , <i>Pipistrellus nathusii</i> , <i>Pipistrellus pipistrellus</i> , <i>Pipistrellus pygmaeus</i>	N/A	Lovers Lane Entrance	N/A	N/A	N/A
Notes/observations: Total of 1356, 133 and 9 bat passes in June, July and August respectively, and an average of 12.5 pph. Of these bat passes, 99.7% were common or soprano pipistrelle, and 0.3% were rarer bat species.						
06 – 09/2020	<i>Barbastella barbastellus</i> , <i>Eptesicus serotinus</i> , <i>Nyctalus noctula</i> , <i>Pipistrellus nathusii</i> , <i>Pipistrellus pipistrellus</i> , <i>Pipistrellus pygmaeus</i>	N/A	MS02	N/A	N/A	N/A
Notes/observations: Total of 651, 181 and 225 bat passes in June, July and August respectively, and an average of 8.8 pph. Of these bat passes, 93.2% were common or soprano pipistrelle, and 6.8% were rarer species.						
06 – 09/2020	<i>Barbastella barbastellus</i> , <i>Eptesicus serotinus</i> , <i>Nyctalus noctula</i> , <i>Pipistrellus nathusii</i> , <i>Pipistrellus pipistrellus</i> , <i>Pipistrellus pygmaeus</i>	N/A	MS03	N/A	N/A	N/A

Notes/observations: Total of 306, 247 and 7 bat passes in June, July and August respectively, and an average of 4.7pph. Of these bat passes, 80% were common or soprano pipistrelle, and 20% were rarer species.						
06 – 09/2020	<i>Barbastella barbastellus</i> , <i>Nyctalus noctula</i> , <i>Pipistrellus pipistrellus</i> , <i>Pipistrellus pygmaeus</i>	N/A	MS05	N/A	N/A	N/A
Notes/observations: Total of 344, 43 and 0 bat passes in June, July and August respectively, and an average of 3.2pph. Of these bat passes, 95.9% were common or soprano pipistrelle, and 4.1% were rarer species.						
06 – 09/2020	<i>Barbastella barbastellus</i> , <i>Eptesicus serotinus</i> , <i>Nyctalus noctula</i> , <i>Pipistrellus nathusii</i> , <i>Pipistrellus pipistrellus</i> , <i>Pipistrellus pygmaeus</i>	N/A	MS06	N/A	N/A	N/A
Notes/observations: Total of 369, 389 and 25 bat passes in June, July and August respectively, and an average of 6.5pph. Of these bat passes, 83.8% were common or soprano pipistrelle, and 16.2% were rarer species.						
06 – 09/2020	<i>Barbastella barbastellus</i> , <i>Nyctalus noctula</i> , <i>Pipistrellus nathusii</i> , <i>Pipistrellus pipistrellus</i> , <i>Pipistrellus pygmaeus</i>	N/A	MS07	N/A	N/A	N/A
Notes/observations: Total of 303, 51 and 93 bat passes in June, July and August respectively, and an average of 3.7pph. Of these bat passes, 97.3% were common or soprano pipistrelle, and 2.7% were rarer species.						
06 – 09/2020	<i>Barbastella barbastellus</i> , <i>Pipistrellus pipistrellus</i> , <i>Pipistrellus pygmaeus</i>	N/A	MS09	N/A	N/A	N/A
Notes/observations: Total of 758 and 10 bat passes in June and August respectively, and an average of 9.5pph. Of these bat passes, 93.8% were common or soprano pipistrelle, and 6.2% were rarer species.						
06 – 09/2020	<i>Barbastella barbastellus</i> , <i>Nyctalus noctula</i> , <i>Pipistrellus nathusii</i> , <i>Pipistrellus pipistrellus</i> , <i>Pipistrellus pygmaeus</i>	N/A	MS12	N/A	N/A	N/A
Notes/observations: Total of 495, 1050 and 905 bat passes in June, July and August respectively, and an average of 20.4pph. Of these bat passes, 96.3% were common or soprano pipistrelle, and 3.7% were rarer species.						
06 – 09/2020	<i>Barbastella barbastellus</i> , <i>Pipistrellus pipistrellus</i> , <i>Pipistrellus pygmaeus</i>	N/A	MS14	N/A	N/A	N/A

Notes/observations: Total of 1998, 657 and 194 bat passes in June, July and August respectively, and an average of 23.7pph. Of these bat passes, 98.2% were common or soprano pipistrelle, and 1.8% were rarer species.						
06 – 09/2020	<i>Barbastella barbastellus</i> , <i>Pipistrellus nathusii</i> , <i>Pipistrellus pipistrellus</i> , <i>Pipistrellus pygmaeus</i>	N/A	MS15	N/A	N/A	N/A
Notes/observations: Total of 973, 2163 and 3 bat passes in June, July and August respectively, and an average of 26.2pph. Of these bat passes, 99.7% were common or soprano pipistrelle, and 0.3% were rarer species.						
06 – 09/2020	<i>Barbastella barbastellus</i> , <i>Pipistrellus pipistrellus</i> , <i>Pipistrellus pygmaeus</i>	N/A	MS18	N/A	N/A	N/A
Notes/observations: Total of 445, 1130 and 288 bat passes in June, July and August respectively, and an average of 15.5pph. Of these bat passes, 96.4% were common or soprano pipistrelle, and 3.6% were rarer species.						
06 – 09/2020	<i>Barbastella barbastellus</i> , <i>Pipistrellus pipistrellus</i> , <i>Pipistrellus pygmaeus</i>	N/A	MS19	N/A	N/A	N/A
Notes/observations: Total of 232 and 678 bat passes in June and August respectively, and an average of 11.2pph. Of these bat passes, 98.0% were common or soprano pipistrelle, and 2.0% were rarer species.						
06 – 09/2020	<i>Barbastella barbastellus</i> , <i>Pipistrellus nathusii</i> , <i>Pipistrellus pipistrellus</i> , <i>Pipistrellus pygmaeus</i>	N/A	MS20	N/A	N/A	N/A
Notes/observations: Total of 953, 1123 and 960 bat passes in June, July and August respectively, and an average of 25.3pph. Of these bat passes, 95.3% were common or soprano pipistrelle, and 4.7% were rarer species.						
06 – 09/2020	<i>Barbastella barbastellus</i> , <i>Pipistrellus nathusii</i> , <i>Pipistrellus pipistrellus</i> , <i>Pipistrellus pygmaeus</i>	N/A	MS22	N/A	N/A	N/A
Notes/observations: Total of 1314 and 803 bat passes in June and August respectively, and an average of 26.1pph. Of these bat passes, 97.4% were common or soprano pipistrelle, and 2.6% were rarer species.						
06 – 09/2020	<i>Barbastella barbastellus</i> , <i>Nyctalus noctula</i> , <i>Pipistrellus pipistrellus</i> , <i>Pipistrellus pygmaeus</i>	N/A	MS25	N/A	N/A	N/A
Notes/observations: Total of 313, 799 and 455 bat passes in June, July and August respectively, and an average of 13.1pph. Of these bat passes, 98.2% were common or soprano pipistrelle, and 1.8% were rarer species.						
06 – 09/2020	<i>Barbastella barbastellus</i> , <i>Pipistrellus pipistrellus</i> , <i>Pipistrellus pygmaeus</i>	N/A	MS26	N/A	N/A	N/A

Notes/observations: Total of 1492, 75 and 8 bat passes in June, July and August respectively, and an average of 13.1pph. Of these bat passes, 99.9% were common or soprano pipistrelle, and 0.1% were rarer species.						
06 – 09/2020	<i>Barbastella barbastellus</i> , <i>Pipistrellus nathusii</i> , <i>Pipistrellus pipistrellus</i> , <i>Pipistrellus pygmaeus</i>	N/A	MS27	N/A	N/A	N/A
Notes/observations: Total of 1994, 3575 and 388 bat passes in June, July and August respectively, and an average of 49.6pph. Of these bat passes, 99.8% were common or soprano pipistrelle, and 0.2% were rarer species.						
06 – 09/2020	<i>Barbastella barbastellus</i> , <i>Pipistrellus nathusii</i> , <i>Pipistrellus pipistrellus</i> , <i>Pipistrellus pygmaeus</i>	N/A	MS28	N/A	N/A	N/A
Notes/observations: Total of 988,848 and 255 bat passes in June, July and August respectively, and an average of 17.4pph. Of these bat passes, 99.2% were common or soprano pipistrelle, and 0.8% were rarer species.						
06 – 09/2020	<i>Pipistrellus pipistrellus</i> , <i>Pipistrellus pygmaeus</i>	N/A	MS29	N/A	N/A	N/A
Notes/observations: Total of 0, 271 and 77 bat passes in June, July and August respectively, and an average of 2.9pph. Of these bat passes, 100% were common or soprano pipistrelle and 0% were rarer species.						
06 – 09/2020	<i>Barbastella barbastellus</i> , <i>Pipistrellus pipistrellus</i> , <i>Pipistrellus pygmaeus</i>	N/A	MS30	N/A	N/A	N/A
Notes/observations: Total of 936, 680 and 94 bat passes in June, July and August respectively, and an average of 14.2pph. Of these bat passes, 98.4% were common or soprano pipistrelle, and 1.6% were rarer species.						
06 – 09/2020	<i>Barbastella barbastellus</i> , <i>Pipistrellus nathusii</i> , <i>Pipistrellus pipistrellus</i> , <i>Pipistrellus pygmaeus</i>	N/A	MS31	N/A	N/A	N/A
Notes/observations: Total of 297, 12 and 9 bat passes in June, July and August respectively, and an average of 2.7pph. Of these bat passes, 97.8% were common or soprano pipistrelle, and 2.2% were rarer species.						
06 – 09/2020	<i>Barbastella barbastellus</i> , <i>Nyctalus noctula</i> , <i>Pipistrellus pipistrellus</i> , <i>Pipistrellus pygmaeus</i>	N/A	MS33	N/A	N/A	N/A
Notes/observations: Total of 1067, 1512 and 468 bat passes in June, July and August respectively, and an average of 25.4pph. Of these bat passes, 97.0% were common or soprano pipistrelle, and 3.0% were rarer species.						
06 – 09/2020	<i>Barbastella barbastellus</i> , <i>Pipistrellus pipistrellus</i> , <i>Pipistrellus pygmaeus</i>	N/A	MS34	N/A	N/A	N/A
Notes/observations: Total of 1301, 226 and 45 bat passes in June, July and August respectively, and an average of 13.1pph. Of these bat passes, 94.3% were common or soprano pipistrelle, and 5.7% were rarer species.						

06 – 09/2020	<i>Barbastella barbastellus</i> , <i>Pipistrellus pipistrellus</i> , <i>Pipistrellus pygmaeus</i>	N/A	MS35	N/A	N/A	N/A
Notes/observations: Total of 317, 868 and 87 bat passes in June, July and August respectively, and an average of 10.6pph. Of these bat passes, 95.5% were common or soprano pipistrelle, and 4.5% were rarer species.						
06 – 09/2020	<i>Pipistrellus pipistrellus</i> , <i>Pipistrellus pygmaeus</i>	N/A	MS36	N/A	N/A	N/A
Notes/observations: Total of 0, 14 and 115 bat passes in June, July and August respectively, and an average of 1.1pph. Of these bat passes, 100% were common or soprano pipistrelle, and 0% were rarer species.						
06 – 09/2020	<i>Barbastella barbastellus</i> , <i>Eptesicus serotinus</i> , <i>Nyctalus noctula</i> , <i>Pipistrellus nathusii</i> , <i>Pipistrellus pipistrellus</i> , <i>Pipistrellus pygmaeus</i>	N/A	South of Great Mount Wood	N/A	N/A	N/A
Notes/observations: Total of 338, 735 and 1 bat passes in June, July and August respectively, and an average of 9.0pph. Of these bat passes, 90% were common or soprano pipistrelle, and 10% were rarer species.						
06 – 09/2020	<i>Barbastella barbastellus</i> , <i>Pipistrellus nathusii</i> , <i>Pipistrellus pipistrellus</i> , <i>Pipistrellus pygmaeus</i>	N/A	The Grove	N/A	N/A	N/A
Notes/observations: Total of 1406, 169 and 36 bat passes in June, July and August respectively, and an average of 13.4pph. Of these bat passes, 99.9% were common or soprano pipistrelle, and 0.1% were rarer species.						
06 – 09/2020	<i>Barbastella barbastellus</i> , <i>Nyctalus noctula</i> , <i>Pipistrellus pipistrellus</i> , <i>Pipistrellus pygmaeus</i>	N/A	Middle of Goose Hill	N/A	N/A	N/A
Notes/observations: Total of 584 bat passes in August, and an average of 13.1pph. Of these bat passes, 97.8% were common or soprano pipistrelle, and 2.2% were rarer species.						

Provide further (brief) comments/explanation if required:

Back-tracking Surveys

The full results of the back-tracking surveys are summarised in [REF11].

A commuting route for pipistrelle species and barbastelle was identified in 2020 along the northern edge of Fiscal Policy, and bat foraging activity was recorded along the access track and arable fields neighbouring Fiscal Policy. This will not be retained. Barbastelle foraging and commuting activity was also recorded in 2020 along the tracks within Goose Hill woodland, predominantly north to south. These areas will be impacted by the proposed development.

The results of the 2020 backtracking surveys and bat box checks indicate that Fiscal Policy and Kenton Hills are both moderate level roost resource, though only a small area of this woodland is proposed for clearance. (All roosts identified to-date are located in areas to be retained).

Goose Hill is considered to be a lower level roost resource relative to Fiscal Policy and Kenton Hills on the basis

of surveys completed to-date. In general it has been found to support minimal numbers of trees with roosting potential and surveys have identified limited evidence of bat roosting behaviour. Despite the high number of trees being lost, it is considered that the overall impact on roosting bats would be low.

Trapping and Radio-tracking Surveys

Some roosts were identified during the trapping and radiotracking surveys undertaken between 2010 and 2014. The majority of these roosts identified were located outside the red line boundary of the Scheme and will not be directly impacted by the development. See Annex 14A8.4 Results for further details relating to these roosts.

Automated Detector Surveys

The static detector surveys concluded the following.

In terms of overall bat activity, the static detector located on the western edge of the existing Nuclear facility (MS27) recorded the highest levels of bat activity. It was concluded from assessing overall activity levels across the site that the two most important areas around the MDS for foraging bats were:

- The woodland habitats throughout the EDF Energy Estate; and
- the Bridleway from Lovers Lane to the north.

The percentage of the overall number of bar calls attributed to barbastelle (2.53%) is unusually high and indicates that the EDF Energy Estate is an important resource for this species.

Areas with the highest proportions of 'rare' bats (i.e. not common or soprano pipistrelle) were:

- woodland south of Lower Abbey Farm; and
- north-east corner of Ash Wood.

Analysis of the times of calls did not indicate the presence of a roost within close proximity to any of the monitoring locations.

C7 Interpretation/evaluation of survey results (also see the Bat Mitigation Guidelines section 5.8 and Figure 4 for conservation significance of roost type): Please complete the following table:

Structure reference (ensure consistency with other text and Figures)	Species	Count / estimate of number of individuals	Roost location	Site status assessment (e.g. maternity, feeding roost, swarming site, hibernation confirmed etc)	Conservation significance of roost
<i>N.B. A number of bats is provided if the roost is a confirmed roost and the bat was positively identified as roosting there. A * denotes a roost where the PRF was identified from daytime tracking but not confirmed through observation of emergence. Roost ID denoted with a † indicates a roost found outside the licence area.</i>					
AF24	<i>Pipistrellus pygmaeus</i>	1	Hazard beam on tree within land associated with Upper Abbey Farm	Day	Low
G136	<i>Myotis nattereri</i>	1	Flute in stem.	Hibernation	Low
R1†	<i>Barbastella barbastellus</i>	4	TM4562064134	Maternity	High
R2†*	<i>Barbastella barbastellus</i>	1	TM4605164376	Maternity	High
R3†	<i>Barbastella barbastellus</i>	4	TM4574965204	Maternity	High
R4†*	<i>Barbastella barbastellus</i>	1	TM4686364160	Maternity	High
R5†	<i>Barbastella barbastellus</i>	9	TM4671665205	Maternity	High
R6†*	<i>Barbastella barbastellus</i>	1	TM4475764668	Maternity	High
R7†*	<i>Barbastella barbastellus</i>	1	TM4671465232	Maternity	High

R8†	<i>Barbastella barbastellus</i>	3	TM4665465267	Maternity	High
R9†	<i>Barbastella barbastellus</i>	25	TM4601865206	Maternity	High
R10†*	<i>Barbastella barbastellus</i>	1	TM4366263046	Maternity	High
R11	<i>Barbastella barbastellus</i>	1	TM4637264587	Maternity	High
R12†*	<i>Barbastella barbastellus</i>	1	TM4514266909	Maternity	High
R13†	<i>Barbastella barbastellus</i>	5	TM4571365161	Maternity	High
R14†	<i>Barbastella barbastellus</i>	11	TM4572365181	Maternity	High
R15†*	<i>Barbastella barbastellus</i>	1	TM4634864503	Maternity	High
R16†*	<i>Barbastella barbastellus</i>	1	TM4625664022	Unknown – non-breeding male bat.	High
R17†*	<i>Barbastella barbastellus</i>	10	TM4559565745	Maternity	High
R18†	<i>Barbastella barbastellus</i>	3 – 8	TM4611264074	Maternity	High
R19†*	<i>Barbastella barbastellus</i>	7	TM4572765749	Maternity	High
R20†*	<i>Barbastella barbastellus</i>	2	TM4566764166	Maternity	High
R21†	<i>Barbastella barbastellus</i>	4 – 8	TM4510264151	Maternity	High
R22†*	<i>Barbastella barbastellus</i>	1	TM4404764496	Unknown – non-breeding male bat.	High
R23†*	<i>Barbastella barbastellus</i>	1	TM4643465519	Maternity	High
R24†*	<i>Barbastella barbastellus</i>	3	TM4681467313	Maternity	High
R25†*	<i>Barbastella barbastellus</i>	2	TM4665167495	Maternity	High
R26†*	<i>Barbastella barbastellus</i>	5	TM4604065049	Maternity	High
R27†*	<i>Barbastella barbastellus</i>	7	TM4640364419	Maternity	High
R28†*	<i>Barbastella barbastellus</i>	3	TM4644467466	Maternity	High
R29†*	<i>Barbastella barbastellus</i>	1	TM4692467433	Unknown – non-breeding adult female bat.	High
R30†*	<i>Barbastella barbastellus</i>	1	TM4651967474	Unknown – non-breeding adult female bat.	High
R31†*	<i>Barbastella barbastellus</i>	2	TM4664467289	Maternity	High
R32†*	<i>Barbastella barbastellus</i>	4	Restricted Access	Maternity	High
R33†*	<i>Barbastella barbastellus</i>	1	Restricted Access	Unknown – adult male bat.	High
R34†*	<i>Barbastella barbastellus</i>	1	Restricted Access	Unknown – adult male bat.	High
R35†*	<i>Barbastella barbastellus</i>	1	Restricted Access	Unknown – adult male bat.	High
R36†*	<i>Barbastella barbastellus</i>	2	Restricted Access	Maternity	High
R37†*	<i>Barbastella barbastellus</i>	1	Restricted Access	Maternity	High

If hibernation roost(s) were not identified in the survey, please indicate the hibernation roost potential of the site and/or structure(s) which will be impacted by the

☐ High
☐ Medium

proposal by ticking the relevant box.

☐ Low

Provide details on the assessment and rationale of the hibernation roost potential.

Where a site/structure/tree has hibernation potential and/or hibernation roosts have been confirmed, Natural England expects any works which may impact on hibernating bats, or their roosts, to be undertaken outside of the hibernation period.

When conducting roost suitability assessment surveys, consideration was always given to the suitability of the structure/tree for hibernating bats. A hibernating *Myotis nattereri* bat was confirmed within tree G136, confirming the presence of hibernating bat(s) within the site.

As with other roost types, the tree surveys have been undertaken to identify roost suitability, and not bat presence/absence, so it is assumed based on available roost resource that hibernating bats would use the trees present across the site. Any works (vegetation/tree clearance) which may impact on hibernating bats or their roosts will therefore be conducted outside of the bat hibernation period.

Provide further (brief) comments / explanation if required:

With reference to Table C7 above – as per Bat Mitigation Guidelines, for the purposes of impact assessment and mitigation design, all roosts containing subadult bats of any sex, or pregnant, lactating or post-lactating female bats (with no evidence to the contrary such as those proven to share a roost with other subadults or females through radio-tracking) were assumed to be from a unique maternity roost within the woodland, regardless of whether they were tagged and/or tracked back to a roost.

Approach to evaluation and interpretation of results

Both capture and known roost data collected during the surveys is used to formulate a risk assessment of bats likely to be present during tree felling/clearance works. The survey data are able to confirm species/numbers of bats known to roost within the woodland as well as other tree roosting bats visiting the site at the time of the surveys, as these bats could also be roosting within the site at other times of the year, given the highly mobile behaviour of tree-roosting bats. Given this risk factor, a licence will be sought and mitigation provided for the entire tree-roosting species assemblage using the site to ensure that all species likely to be roosting can be appropriately considered and safeguarded during the tree felling operations (i.e. suitable mitigation and bat rescue procedures). In addition, the site as a whole will also be considered as a roosting resource for bats based primarily on the results of tracking data to provide a level of importance of the site at a landscape scale.

Trees within the DCO boundary (which includes all currently proposed vegetation removal zones) were subject to ground level tree assessment surveys in 2020 and in 2021 update surveys were conducted of trees within the vegetation removal zones. Two confirmed bat roosts were identified within the vegetation removal zones as part of these surveys.

Potential Bat Roost Assessments (GLTAs) of Trees

Sizewell C Licence Area	Trees with potential roost features		
	High	Moderate	Low
MDS: vegetation removal zones only	9	45	32
MDS: within RLB boundary	30	207	85
AD sites: Freight Management Facility	0	1	0
AD sites: Two Village Bypass	16	11	2
AD sites: Sizewell Link Road	18	24	10
AD sites: Southern Park and Ride (Wickham)	1	1	0
AD sites: Yoxford	0	0	0
AD sites: Green Rail Route	1	1	0

ABLST Results

In 2009 – 2014, ABLSTs were employed to gain a picture of the assemblage of bats within the woodland, locate late summer roosts of bats using the woodland, and inform licensing and mitigation requirements. The bat assemblage at Sizewell as represented by the trapped bats is as follows:

Species	Numbers trapped			
	May 2009 (Corylus) Licence. 20091142	June 2010 (Corylus) Licence. 20102328	July/August 2011 (Corylus) Licence. 20112929	August 2014 (Corylus) Licence Unknown
<i>Pipistrellus pygmaeus</i>	16	69	51	168
<i>Pipistrellus pipistrellus</i>	12	58	24	37
<i>Pipistrellus nathusii</i>	0	0	1	0
<i>Pipistrellus</i> sp.	0	4	0	0
<i>Myotis nattereri</i>	5	19	26	27
<i>Plecotus auratus</i>	2	13	19	13
<i>Barbastella barbastellus</i>	4 x F, 1 x M	9	18	27
<i>Eptesicus serotinus</i>	0	1	9	1
<i>Nyctalus noctule</i>	0	2	0	3
<i>Myotis daubentonii</i>	2	1	0	9
TOTAL	42 (five species)	177	148	285

A summary of the survey effort for each tagged bat is provided below.

Survey Effort Summary: number of tracking and emergence surveys by tagged bat				
Date Tagged	Tag	Species	Daytime Tracking	Roost Characterisation
01/06/2010	1a	Barbastelle	Y	Y
01/06/2010	2a	Barbastelle	Y	Y
02/06/2010	3a	Barbastelle	Y	N
02/06/2010	4a	Barbastelle	Y	Y
05/06/2010	5a	Barbastelle	Y	Y
07/06/2010	6a	Barbastelle	Y	N
08/06/2010	7a	Barbastelle	Y	Y
31/07/2011	1b	Natterer's	Y	Y
30/07/2011	2b	Natterer's	N	N
31/07/2011	3b	Barbastelle	N	Y
31/07/2011	4b	Brown long-eared	Y	N
31/07/2011	5b	Barbastelle	Y	Y
31/07/2011	6b	Barbastelle	Y	Y
31/07/2011	7b	Barbastelle	Y	N
31/07/2011	8b	Barbastelle	Y	Y
01/08/2011	9b	Barbastelle	Y	Y
02/08/2011	10b	Barbastelle	Y	Y
03/08/2011	11b	Barbastelle	Y	Y
03/08/2011	12b	Barbastelle	Y	Y
03/08/2011	13b	Barbastelle	Y	Y
03/08/2011	14b	Barbastelle	Y	Y
03/08/2011	15b	Barbastelle	Y	Y
03/08/2011	16b	Barbastelle	Y	Y

03/08/2011	17b	Barbastelle	Y	Y
03/08/2011	18b	Barbastelle	Y	Y
03/08/2011	19b	Barbastelle	Y	Y
03/08/2011	20b	Barbastelle	Y	Y
04/08/2011	21b	Natterer's	N	N
04/08/2011	22b	Natterer's	Y	Y
11/08/2014	1c	Barbastelle	Y	Y
11/08/2014	2c	Barbastelle	Y	N
11/08/2014	3c	Barbastelle	Y	N
12/08/2014	4c	Barbastelle	Y	N
12/08/2014	5c	Barbastelle	Y	N
12/08/2014	6c	Barbastelle	Y	Y
12/08/2014	7c	Barbastelle	Y	Y
12/08/2014	8c	Barbastelle	Y	N
12/08/2014	9c	Serotine	Y	N
13/08/2014	10c	Barbastelle	Y	N
13/08/2014	11c	Barbastelle	Y	N
12/08/2014	12c	Barbastelle	Y	N
13/08/2014	13c	Barbastelle	Y	N
13/08/2014	14c	Barbastelle	Y	Y
13/08/2014	15c	Barbastelle	Y	Y
13/08/2014	16c	Barbastelle	Y	Y
13/08/2014	17c	Barbastelle	Y	Y
14/08/2014	18c	Barbastelle	Y	N

Important Advice:

Survey maps that must be included in this section of the Method Statement, or as separate documents if preferred, are listed in *section I "Map checklist" at the end of this document.*

Insert survey figures, photographs etc below here if not submitting them as separate documents

D Impact assessment in absence of mitigation or compensation for each species / roost type

(also see section 6 of the Bat Mitigation Guidelines). Where appropriate you must take into consideration cumulative impacts of your proposals on the bat species and populations identified in your survey in each section.

Guidance on quantifying roosts for the purpose of licensing: *To be considered the same roost, the locations need to have the same **functional** and **qualitative** (e.g. physical) characteristics, be used by the **same species** for the **same purpose** (e.g. day roosting) and be within the **same building / structure**. If the physical characteristics are different (e.g. one roost is in external crevices in the wall and the other is in the roof void against internal timbers) then they should be considered different roosts - because they offer bats different roosting opportunities. If the physical characteristics are similar and provide the same functional characteristics, used by the same species for the same purpose (e.g. transitional roost) but with different individual roosting locations within the overall building / structure, that could be considered one transitional roost. If two species are using an area which provides the same characteristics, for the same function, it is still two roosts - as there are two species.*

D1 Initial impacts: The impact/s of activities undertaken on site pre-development and during works must be considered and explained. **Consider disturbance** (such as human presence, noise, vibration, dust, lighting, access obstruction due to scaffolding and plastic sheeting etc), **temporary damage and temporary loss of roosts and injuring/killing.**

E.g. Unsupervised contractor removing roof tiles has the potential to crush 3 common pipistrelle bats using the roof tiles as day roosts. Major negative impact at a site level; Demolition of an extension to a building will take place adjacent to a maternity roost of common pipistrelle bats situated under the soffit board of the retained building. Potential for significant disturbance if demolition works are undertaken during the maternity period through vibration, noise and dust. Medium negative impact on a local level.

Direct and Indirect Impacts – definition of assessment zones

Figures Di, Diii, Dvii, Dix, Dxi, and Dxiii define the direct impact zone of the MDS and each of the AD sites, and covers all potential land required during the construction phase of the scheme, including the Main Development Sites, the Associated Development sites, and other construction works such as site compounds and new access or haul roads. It also covers areas where no destructive works will occur such as use of existing roads required for access, and areas for beneficial works comprising woodland enhancement and habitat creation. The figure is effectively a worst-case scenario for assessing direct impacts and is applied in the absence of further site-specific knowledge and requisite detail of planned works. The impact zone assessed is shown clearly in the above-mentioned figures and the new woodland creation is shown in Figures E3ii, E3iv, E3vi, E3viii and E3x. For this assessment, the indirect impact zone is defined as a 20m buffer on the direct impact zone. The 20m buffer is based on what has been previously agreed with Natural England on other similar schemes, and it represents professional judgement and consensus agreement. Retained woodland will buffer impacts from the Scheme significantly over other habitat type, as the mature trees and shrubs present will filter air turbulence, noise, dust and light pollution, reducing the area of the impacted zone significantly.

Predicted Initial Impacts

Impacts discussed here are focussed on barbastelle. Impacts on all other species are either the same or lower than barbastelle, and any mitigation designed for barbastelle will also benefit other bat species.

Main Development Site

Prior to mitigation, the predicted initial impacts of the Scheme on the bat assemblage at Sizewell C MDS will be caused by felling operations in the construction phase and will comprise:

Direct Impacts:

- Habitat loss – foraging.
- Habitat loss – roosts.
- Habitat fragmentation (due to habitat loss)

Indirect Impacts:

- Disturbance from lighting and noise.

These impacts are discussed in detail in the Environmental Statement [REF5].

Habitat Loss - Foraging

There will be loss of approximately 89.6ha of suitable bat foraging habitat (0.8% of barbastelle CSZ), which includes 7.2 ha of semi-natural broad-leaved woodland (0.1% of barbastelle CSZ), and 39.4 ha of plantation woodland (0.4% of barbastelle CSZ). However, the majority of the 212 ha of habitat loss is arable, a habitat of sub-optimal value to foraging barbastelle.

Approximately 154 ha of habitat creation has already been undertaken on the wider EDF estate as advanced mitigation or compensation, within off-site areas of Aldhurst Farm, the marsh harrier improvement area, and a reptile receptor area at Sizewell Gap. The locations of these are presented within the Bat Mitigation Strategy [REF18].

Given the small proportion of home ranges of barbastelle CSZ being lost, the fact that they travel considerable distances to forage, and the quantity of habitat creation being proposed, the overall impact of barbastelle as a result of habitat loss is a **minor adverse effect, which is considered to be not significant**.

Habitat Loss – Roosts

The impact assessment relating to roost loss is based on impacts on the overall roost resource, rather than confirmed occupation. The construction will result in the loss of habitats confirmed as suitable for roosting barbastelle. Loss of roosting resource will be mitigated by the provision of bat boxes with number based on the numbers of features to be lost.

No buildings or underground sites suitable for use by hibernating barbastelle would be demolished during the establishment of the temporary construction site.

The woodlands across the site differ in the extent to which they contribute to the potential barbastelle roost

resource. The preferred tree species used by barbastelle was oak, and the most common roost feature was raised, lifted or loose bark. Conifer plantation, such as that principally present within Goose Hill, is therefore sub-optimal for roosting barbastelle, providing limited availability of suitable roost features. A detailed survey of woodland areas and the value of the trees present within these was conducted, which identified the areas of woodland due to be the most highly impacted (Goose Hill, Stonewall Belt and the treeline which extends north from Kenton Hills) to provide a low roost resource relative to the areas to be retained or only partially impacted.

Overall, given the mitigation proposed, the value of the roost resource to be lost relative to the roost resource to be retained, and the extent of suitable roost resource to be retained in the surrounding area, the impact of potential roost loss on barbastelle would have a **minor adverse** effect, which is considered to be **not significant**.

Habitat Fragmentation (due to habitat loss)

Isolation of habitat areas currently used by barbastelle will occur as a result of the proposed development. The effect would be temporary and reversible but will persist for the 10 year construction period.

Given that barbastelle travel freely across open habitats, this indicates a reduced sensitivity to gaps in the landscape, compared to other bat species. Few definitive barbastelle commuting routes were identified and there is little evidence that open arable landscapes acted as a barrier to barbastelle movement, potentially given the mosaic of habitats within close proximity of each other meaning that bats don't need to travel long distances.

Areas of significant barbastelle movement were:

- Ash Wood, The Grove, Goose Hill and Sizewell Marshes SSSI (pre-lactation);
- Ash Wood, Plantation Cottages woodland, Leiston Old Abbey woodland (post-birthing period);
- Kenton Hills (throughout active season);
- Black Walks and The Grove (throughout active season)

Given the details of these movements (detailed in the Bat Mitigation Strategy) it is considered that barbastelle will have a low sensitivity to habitat fragmentation in this location, and any key commuting routes identified for barbastelle will be retained. All above areas (except Goose Hill) will be retained, however habitat removal will disrupt some of the identified flight-lines and create a barrier to movement, in particular:

- Three haul roads severing Upper Abbey Bridleway;
- The use of Bridleway 19/Fiscal Policy junction as a haul route;
- The loss of Goose Hill conifer plantation to construction works.

Mitigation for this habitat fragmentation will comprise:

- A SSSI crossing, linking Goose Hill to the main platform, designed to promote connectivity between habitats to the north and south of the construction footprint. Will include an oversized culvert suitable for bats to enable east-west movement, with planting along the embankment to facilitate north-south movements. Details of these are provided in the Bat Mitigation Plan;
- Dark corridors informed by the lighting studies, which will create suitable foraging corridors connecting habitats to the north with habitats to the south.
- The temporary construction areas (mostly arable fields) will be converted to acid grassland following the construction phase.

The impact of habitat fragmentation was considered in the ES to have a moderate adverse effect on the barbastelle population (significant) during the construction phase but a minor adverse effect (not significant) for all other species. However, with the introduction of further new mitigation include the new broad habitat corridor linking Kenton Hills with Ash Cottages, combined with the well-defined dark corridor and low light areas, the combined mitigation package is predicted to reduce the residual effect to **minor adverse (not significant)** for fragmentation effects on barbastelle bats.

Disturbance from Lighting and Noise

Noise

Noise disturbance will be an indirect impact which will occur as a result of construction activities, such as noise from machinery, increased vehicle movements and increased human presence. This will be variable, depending on the nature of the construction activity. It is expected that Phase 1 of construction will have the highest predicted noise levels, and that noise levels will decrease over time.

Noise could affect bats in the following ways:

- Disturbance to roosting bats in adjacent areas of woodland or buildings causing delayed emergence, increased activity within the roost, or roost abandonment;
- Disturbance to foraging bats, through a masking effect, impacting the ability of bats to echolocate;
- Disturbance to commuting bats through displacement of bats from noisy areas and avoidance of these

aversive stimulus.

Through a literature review (detailed in the Environmental Statement) relating to roosting bats, it is inferred that noise modelling over 60dB has been applied as an indicative threshold for potential roosting disturbance, and 65dB as an indicative threshold for foraging disturbance.

Noise modelling has identified the potential for roosts/foraging areas to experience noise levels above these thresholds:

- Nine known barbastelle roosts (Kenton Hills and Ash Wood areas) will experience noise levels above the 65dB threshold (all but one of these outside of the licence area).
- Eight known foraging/commuting areas have the potential to experience noise levels above 65dB during Phases 1 and 2 of construction.

All appropriate measures will be employed to avoid impacts and safeguard roosting, commuting and foraging bats. Noise mitigation will include earth bunds, and restriction of working hours, with noise very rarely exceeding the thresholds at night.

Noise levels will be monitored to determine whether disturbance levels are likely to exceed a threshold triggering requirement of a licence. This will consider the noise levels, and the activity of bats compared to the baseline.

Overall, once mitigation and monitoring has been considered, the impact of construction noise on the barbastelle population is considered to have a **minor adverse effect** which is considered to be **not significant**.

Lighting

An increase in light levels and light spillage could impact barbastelle, causing delayed emergence/roost abandonment, and changes in foraging and commuting activity through displacement of bats from lit areas. Given that the local barbastelle population is located in a predominately dark, rural location, it is considered that barbastelle within the ZoI would have a sensitivity to lighting impacts.

Thirteen barbastelle roosts have been identified within close proximity to the construction site boundary, particularly concentrated in Ash Wood, Kenton Hills and Nursery Covert, all currently unlit. These have been located within 50m of woodland edges, increasing their sensitivity to surrounding conditions. Light spill onto these roosts could result in delayed emergence and/or roost abandonment.

Key foraging areas have been identified which are to be retained but which may experience lighting disturbance. These are Black Walks, The Grove, Bridleway 19, Eastern Goose Hill, track north of Kenton Hills, peripheral ride through Kenton Hills, Broom Covert. Light spill could reduce foraging success due to delayed emergence, changes in prey behaviour, or reduction in foraging resource.

The construction of the proposed development could exacerbate the habitat fragmentation effect experienced by commuting barbastelle.

As a precaution, 45 additional roosts have been erected within the local landscape, and provision of a bat house (or equivalent) is proposed at Lower Abbey Farm, detailed in the Bat Mitigation Strategy. Other measures such as directional lighting and light attenuation and monitoring are proposed as outlined in the bat non-licensed method statement. The Lighting Management Plan secures dark corridors, low light areas and baseline light levels around site margins to ensure lighting impacts to all bat species are minimised.

Overall, once mitigation has been applied, the impact of lighting on the barbastelle population would have a **minor adverse effect** which is considered to be **not significant**.

Two Village Bypass and Sizewell Link Road

These two associated development sites have been grouped together as the bat assemblages at both locations will be experience the same direct and indirect impacts. During construction, the bat assemblage at the TVB and SLR would be affected by the following impact pathways:

- Habitat loss and habitat fragmentation (including connectivity);
- Disturbance from noise;
- Disturbance from light.

Habitat loss and fragmentation (including connectivity)

Habitat loss will at both sites will primarily consist of arable land as well as hedgerows, broad leaved woodland and mature trees with bat potential. A total of 102 trees are predicted to be lost between the two sites, of which 20 have high potential for bat roosting and 43 have moderate potential. The loss of these trees would mean a

loss of roosting resource and potential roosts.

Where possible, existing vegetation will be retained, however the permanent habitat loss will consist predominately of arable land of sub-optimal foraging value to bats. There will also be removal of approximately 2.91ha of floodplain grassland removal (TVB only), 0.79 ha of broadleaved woodland removal (split between the two sites). During the construction phase there will also be a temporary loss of habitat suitable to support foraging bats, although habitats would be re-instated following construction. The total loss of habitat (including arable) from the TVB constitutes 0.07% of barbastelle CSZ, and between 0.5%-1.9% of the CSZ for other species. The total loss of habitat from the SLR constitutes 0.02% of barbastelle, and 1.9% - 5.4% for other species.

There will also be loss of linear features, such as 5,726 m of hedgerow loss (approximately three quarters of this length from the SLR). However, the majority of species recorded within both of these sites (serotine, noctule, common and soprano pipistrelle and *Myotis* sp) were species which are not reliant on linear features for commuting. This loss of connectivity will be mitigated through woodland creation and reinstatement to improve ecological connectivity.

Given the small proportion of each species' CSZ to be lost, and the fact that the majority of habitat loss comprises arable, and considering the mitigation and planting proposed, it is considered that loss of habitat will have a **permanent, minor adverse effect**, which is considered to be **not significant**.

Disturbance from noise

Noise disturbance will arise as a result of construction activities, increased vehicle movements and increased human presence on-site during construction.

Mitigation measures will comprise:

- Establishment of buffers around sensitive habitats (woodlands and watercourses), and the erection of closeboard fencing where the proposed development abuts woodland. These measures will provide some attenuation of construction noise to retained habitats; and
- Construction working hours to be restricted to bat active periods to avoid impacts on foraging/commuting activity.

Should bats be displaced by construction noise (or through habitat loss) there are other areas of woodland in the wider countryside that would provide suitable alternative roosting and foraging habitat, and activity levels recorded during surveys have indicated that bats are not wholly dependant on the habitats on-site and in it's ZOI.

The extent of noise is likely to be restricted to the footprint of the facility and the habitats in the immediate vicinity of the site. It is considered that noise will cause a temporary and reversible **minor adverse effect**, which is considered to be not significant.

Disturbance from light

Approaches to mitigate light spill during construction include avoidance of artificial lighting, and previously mentioned buffer areas/closed board fencing around sensitive habitats such as woodland and watercourses. A substantial increase in light and light spill over the current baseline could cause disturbance to roosting bats in areas of woodland, e.g. delayed emergence or roost abandonment, or impacts to foraging and commuting bats due to aversion to lit areas, or effects on prey behaviour and availability.

The area over which an increase in lighting is likely to occur would be limited to the footprint of the proposed development. This would result in a **minor adverse effect** which would be temporary and reversible and is considered to be **not significant**.

Freight Management Facility

Prior to mitigation, the predicted initial impacts of the Scheme on the bat assemblage at Sizewell C MDS will be caused by felling operations in the construction phase and will comprise:

Direct Impacts:

- Habitat loss (land take)
- Habitat fragmentation (including connectivity)
- Disturbance from lighting and noise.

These impacts are discussed in detail in the Environmental Statement [REF8].

Habitat Loss and Fragmentation

The proposed development design has sought to minimise the extent of habitat loss through the retention of most of the hedgerows along the site boundaries, and tertiary mitigation measures have been put in place to ensure that ecological constraints associated with removal of trees are considered during the construction

process.

Construction will result in the loss of primarily arable fields and field margins (11 ha), 200 m of defunct species-poor hedgerow, and two trees with bat roosting potential. Most of the hedgerows and trees with potential suitability for roosting bats will be retained, therefore this loss will not significantly reduce roost resource. The hedgerow loss may result in loss of a commuting feature for bats, however this hedgerow is sub-optimal for bats due to existing gaps, and the site predominately supports bat species which are less reliant on linear features for commuting (soprano pipistrelle and common pipistrelle).

Habitats present within the site are sub-optimal for bats, being managed intensively as arable farmland. The bat assemblage therefore will not rely on this for foraging. The land-take will also comprise only 0.88% and 0.38% of the Core Sustainance Zone for common pipistrelle and soprano pipistrelle respectively (the two species recorded most frequently within the site), indicating that there would be a very low magnitude of impact as a result of this loss.

In addition, there are other areas of woodland in the vicinity which would provide suitable alternative roosting and foraging habitat. It is considered that bats would be able to use the large areas of suitable habitat present within the wider ZOI.

The land take would be temporary but long term, and the impact on the bat assemblage would have an overall minor adverse effect, which would be **not significant**.

Disturbance from Noise

Similarly to the MDS, the construction of the proposed development may result in an increase in noise within the site and adjacent habitat, caused by construction activities, increased vehicle movement, and increased human presence on-site during construction (approximately 12 – 18 months).

This disturbance will be mitigated by the development of landscape bunds and a 10m buffer zone, proposed around the northern, eastern and western site boundaries. This would enhance existing vegetation in this area, and would facilitate attenuation of noise to habitats associated with foraging, commuting and roosting bats.

In addition, construction works will be timed so that they do not overlap with periods when bats are active, to avoid impacts on foraging, commuting and roosting bats. However, noise from construction could interfere with the bat assemblage through the disturbance to roosting bats in trees within the retained hedgerows, resulting in delayed emergence or roost abandonment.

As discussed with regards to habitat loss, there are other areas of woodland in the vicinity which would provide suitable alternative roosting and foraging habitat. It is considered that bats would be able to use the large areas of suitable habitat present within the wider ZOI.

The extent of noise from the construction of the proposed development is likely to be restricted to the footprint of the development and habitats on the immediate boundary, resulting in a minor adverse effect which would be temporary, medium term (12 – 18 months) and reversible. This would be **not significant**.

Disturbance from Light

The lighting design aims to minimise light-spill and the potential for light disturbance on adjacent land. The above-mentioned buffer would also reduce light-spill onto adjacent habitats.

An increase in light levels could cause disturbance to roosting bats in areas of woodland, including delayed emergence or roost abandonment, and impacts to foraging and commuting bats, due to aversion to lit areas or effects on prey behaviour and availability. Lighting may also alter the assemblage of invertebrates which are present within the area.

However, the bat assemblage in this location is likely to have a low sensitivity to increases in light levels, and the area over which an increase in lighting is likely to occur would be limited to the site. This will result in a low magnitude of impact with a minor adverse effect, which would be **not significant**.

Green Rail Route

Prior to mitigation, the predicted initial impacts of the Scheme on the bat assemblage at Sizewell C MDS will be caused by felling operations in the construction phase and will comprise:

Direct Impacts:

- Habitat loss;
- Disturbance from noise and vibration; and
- Disturbance from light.

These impacts are discussed in detail in the Environmental Statement [REF7].

Habitat Loss

The extent of habitat loss has been kept to a minimum by the retention of woodland blocks (including Buckle's Wood CWS) which is located immediately adjacent to the site boundary, and the retention of most hedgerows. The loss to be incurred by the development will result in loss of primarily arable land (22ha) as well as four small sections of defunct, species-poor hedgerow and one section of species-rich 'important' hedgerow (780m in total). There will also be loss of two trees with low/moderate potential to support roosting bats. This habitat loss would cause a reduction in foraging and roosting habitat for bats.

Analysis of the CSZ of different species indicates that the loss constitutes <1.8% of the CSZ across all species, and only 0.0007% of the CSZ of barbastelle. In addition, the habitats to be lost are largely sub-optimal for bats with consistently low activity recorded over the arable habitat during the surveys. There was no evidence that bats were roosting within the site during the surveys, however it is possible that bats may occupy roost sites within the site in the future, in which case licensing and mitigation procedures would be followed.

The loss of land used for arable farming would be temporary and reversible, being reinstated as sub-optimal foraging resource for bat following construction. Overall, habitat loss will have a very low or low magnitude of impact. This impact on the bat assemblage will have a minor adverse effect, which is considered to be **not significant**.

Disturbance from Noise

There is anticipated to be an increase in noise arising through construction activities. Noise disturbance may arise through construction activities, vehicle movements and increased human presence on-site during construction (up to 18 months).

Primary mitigation will include landscape bunds provided along the northern side of the proposed rail extension, and part of the southern side. This would facilitate attenuation of noise to habitats associated with foraging, commuting and roosting bats.

In addition, construction works will be timed so that they do not overlap with periods when bats are active, to avoid impacts on foraging, commuting and roosting bats. However, noise from construction could disturb roosting within Buckles Wood CWS and other woodland areas, resulting in delayed emergence or roost abandonment.

Given the mitigation detailed above, it is unlikely that bats would be appreciably displaced by construction activities. Activity levels demonstrate that bat species are not reliant on the habitats within the site and its ZOI. For these reasons, together with the primary mitigation embedded in the design, the bat assemblage is likely to have a low sensitivity to increases in noise levels.

Noise arising from construction is likely to be restricted to the footprint of the facility and habitats on the immediate boundary, resulting in a low magnitude of impact. This would result in a minor adverse effect, which is considered to be not significant. Such an effect would be reversible over time, once construction, operation and removal and reinstatement are complete.

Disturbance from Light

Construction lighting of the proposed rail extension route would increase light levels and cause light-spill into nearby habitats. Primary mitigation includes lighting design to minimise light-spill and the potential for light disturbance. It also includes incorporation of a landscape bund along the northern side of the railway route and part of the southern side. This would facilitate attenuation of light to habitats associated with foraging, commuting and roosting bats.

Light disturbance may impact bats by disturbing them in their roosts (leading to delayed emergence and/or roost abandonment) or impact foraging and commuting bats due to aversion to lit areas, or effects on prey behaviour and availability.

It is considered that the bat assemblage in this location will have a low sensitivity to increases in light levels. The area of increased lighting will be limited to the footprint of the site (including hedgerows) and light spill into surrounding habitats would be minimised. This would result in a low magnitude of impact, with a minor adverse effect, which is considered not significant. This would be temporary and reversible, once the source of lighting is removed.

Southern Park and Ride

Prior to mitigation, the predicted initial impacts of the Scheme on the bat assemblage at Sizewell C MDS will be caused by felling operations in the construction phase and will comprise:

Direct Impacts:

- Habitat loss
- Disturbance from noise
- Disturbance from light

These impacts are discussed in detail in the Environmental Statement [REF6].

Habitat Loss

The construction will primarily result in the loss of arable habitat of sub-optimal value to commuting and foraging bats. Although there will be loss of three potential roost trees, and a short section of hedgerow, all perimeter woodland and the majority of on-site hedgerows will be retained. The removal of trees with bat roost potential will be removed under licence from Natural England (if roosting bats are confirmed during pre-construction checks). Bat boxes will be installed to mitigate for the loss of the trees and potential tree resource.

Habitat loss as a result of construction is predicated to have a minor adverse effect, which will be **not significant**.

Disturbance from Noise

There is anticipated to be an increase in noise arising through construction activities. Noise disturbance may arise through construction activities, vehicle movements and increased human presence on-site during construction (up to 18 months).

This will be mitigated by a 10m buffer between the woodland and the construction area, with a 3m high landscape bund on the boundaries of the scheme. There will also be close-boarded fencing where the proposed development abuts areas of woodland.

Noise disturbance is predicted to have a minor adverse impact which will be **not significant**.

Disturbance from Light

Construction lighting of the proposed park and ride would increase light levels and cause light-spill into nearby habitats. Primary mitigation includes lighting design to minimise light-spill and the potential for light disturbance. It also includes incorporation of a landscape bund along the northern side of the railway route and part of the southern side. This would facilitate attenuation of light to habitats associated with foraging, commuting and roosting bats.

This will be mitigated (similarly to noise) by a 10m buffer between the woodland and the construction area, with a 3m high landscape bund and controlled lighting to minimise light spill. There will also be close-boarded fencing where the proposed development abuts areas of woodland.

Light disturbance is predicted to have a minor adverse impact which will be **not significant**.

Confirm number of roosts to be damaged:

N/A – All roost damage is considered a loss and is detailed in the Roost Loss section below. Given the highly transient nature of bat populations that use trees, the roosts identified below are those which were confirmed as in use by bats at the time of the survey. The bats within the MDS and AD sites are likely to use more trees within the same woodland habitat than those listed in this application. Therefore, the potential roosts detailed above may also support the same populations detailed below and have been fully factored into the overall assessment of the predicted impact and residual effects of the SZC scheme on the bat populations relevant to the whole woodland area proposed for loss.

D2 Long-term impacts: Consider and explain the impacts of the proposed works on the different species populations at a site, local, regional, and national level.

D2.1. Roost modification: e.g. changes to roosts/access points, new entrances (including human access e.g. for servicing/maintenance etc), change in size of roost space, changes in air flow, temperature and humidity, light etc. Please detail the access points into each roost and the type/s of roosts which will be modified.

E.g. Non-mitigated changes to the roof structure, which requires replacing, will lead to the modification of 3 access points into a common pipistrelle maternity roost which will result in bats being unable to enter or exit the roost. Moderate negative impact on a local level.

Confirm number of roosts to be modified:

The woodlands and buildings immediately surrounding the direct impact zone (20m buffer) may be subject to indirect impacts which would be considered 'modification', such as noise and lighting, as described above.

Roosts have been identified within these woodlands however the surveys conducted have focussed predominately on identifying roosting resource. All woodlands present within the 20m buffer and to be retained within the site will likely be indirectly impacted by construction works during the construction phase (worst case scenario). Within both the MDS sites and the AD sites these are expected to result in a **minor impact** which is **not significant**.

D2.2. Roost loss: Loss or deterioration of roosting sites, access points, habitat, etc must be considered. Please detail the access points into each roost and types of roost/s which will be lost.

E.g. Demolition of building reference X in June will lead to the loss of a night roost in the porch used by 1 lesser horseshoe bat and the loss of a maternity brown-long eared bat roost in the loft space. This will lead to the death and/or injury of bats including dependent young and permanent destruction (loss) of both roosts. Moderate negative impact at a site level for lesser horseshoe bats and moderate negative impact at a local level for brown-long eared bats.

Building Roosts:

There are no known building-roosts being destroyed.

Tree Roosts:

A key factor in predicting roost loss is the acknowledgement of the loss of potential roost features. Woodland bats habitually use multiple tree roosts, moving between them regularly and utilising different roosts for different purposes and parts of their life cycle.

The removal of confirmed tree roosts R11 (if still present), AF24 and G136 will lead to the permanent loss of a barbastelle maternity roost, a Natterer's hibernation roost and a transitional roost for soprano pipistrelle. However, it is anticipated that the loss of roost resource (and likely other roosts) from the woodland will represent a larger impact than the loss of those three roosts alone. The woodland loss to enable construction will result in the permanent loss of:

- 8 high potential and 35 moderate potential trees;
- 19 high potential and 23 moderate potential trees from the SLR;
- 1 high potential and 1 moderate potential tree from the SPR;
- 1 high potential and 1 moderate potential tree from the GRR;
- 18 high potential and 11 moderate potential trees from the TVB; and
- 39 high potential and 37 moderate potential trees from the FMF.

In the context of the habitats surrounding each of these areas, and the roosting resource available in woodlands within proximity to the areas of woodland loss, it is considered that the loss of roosting resource (and likely roosts) will result in a **minor adverse impact** which is **not significant**.

D2.3. Fragmentation and isolation: Will the proposed works results in these impacts? E.g. loss of linear features such as hedges, tree lines, increased lighting, severance of flight lines by roads/rail lines, separation of breeding/hibernation sites from feeding grounds, etc.

E.g. In addition to the removal of common pipistrelle day roosts in trees along the proposed road, removal of hedgerows, shown on Figure D, and the construction of the new road will fragment a significant commuting and foraging route for a lesser horseshoe maternity roost. This may cause a reduction in the long term success of the breeding colony of lesser horseshoes by restricting existing foraging range or killing bats on the road. Potentially major negative impact at a site and local level.

Fragmentation of the site:

MDS

Key commuting corridors for bats using the habitats associated with the MDS are Bridleway 19 (which runs from north-south connected to UAF), and the east-west crossroads of Fiscal Policy and Kenton Hills from north to south between Minsmere reserve and Goose Hill/Kenton Hills. An additional period of barbastelle commuting has been noted at the northern corner of the Sizewell Marshes SSSI, with individuals commuting over the reedbeds both to the south (in the direction of the SSSI) and to the north (towards Goose Hill).

The proposed development will result in direct habitat loss which would impact both the woodland roost resource for bats and potential foraging habitat. Areas of habitat will be lost to accommodate the road from the power station to the compound areas. From the MDS there will be a total of 133.69 ha of arable land lost from within the licence area to enable development, however, this is considered sub-optimal habitat for bats. 148.86 ha of other habitat will be lost during the construction of the development. This loss includes plantation/semi-natural woodland, grassland, heathland and shrub, standing water, sparsely vegetated land and urban landscapes.

This habitat loss will likely fragment and isolate areas across the site and disrupt flight lines between the north (Ash Wood, The Grove, Black Walks and Plantation Cottages) and south (Leiston Old Abbey, Sizewell Marshes SSSI, Kenton Hills and Grimseys) of the Scheme. Although this effect would be temporary; it would likely persist for the duration of the ten-year construction period. To mitigate for any potential severance impacts, a crossing (which has been designed to comprise an unlit clear-span bridge) and planting along the embankments, to link Goose Hill to the main platform, facilitating movement across the Scheme. Habitat corridors will be retained where possible and any habitat loss within the Scheme footprint will be mitigated and compensated by the proposed habitat creation on the EDF Estate (See Figure E3ii). This includes the advanced creation of approximately 154ha habitat at Aldhurst Farm, the marsh harrier mitigation area located to the north of the site and the reptile receptor area at Sizewell Gap. Habitats such as grassland, reedbeds, ditches and hedgerows have been planted and/or created. Key commuting routes for bats have been retained, these include a commuting route along Bridleway 19 running north to south through the development, a new commuting route along the north of Kenton Hills centred on two water management zones, a commuting route north to south through the SSSI crossing (as mentioned above) and along a retained section of Goose Hill. An additional commuting route has also been secured through the centre of the construction phase site, between Kenton Hills in the south and Ash Wood in the north. The initial loss of habitat within the Scheme, would be compensated by equivalent or greater value foraging habitat for bats. These have been appropriately assessed and mitigated as part of the impact assessment and these impacts are not licensable.

For a detailed assessment of the above impacts on bat populations present within the Scheme, please refer to the Environmental Statement, the ES addendum (January 2021) and the fourth ES addendum (September 2021).

AD Sites

The proposed AD site developments will result in direct habitat loss which would impact both the woodland roost resource for bats and potential foraging habitat. Areas of loss will vary between the sites however across all AD sites the loss is predominately of arable land with sub-optimal value to foraging/roosting/commuting bats. There is a loss of short sections of hedgerow in almost all AD sites and small numbers of trees to be lost.

The SLR and TVB developments will both involve woodland loss (0.79 ha between them) and hedgerow loss (5726m between them). The TVB will also involve loss of 2.91 ha of floodplain grassland. The designs have avoided and minimised loss of woodland where possible, and the woodland/hedgerow loss in the context of the wider landscape will not be significant. New planting is proposed for both sites, to include trees and woodland, which will provide ecological connectivity during the operational phase.

Fragmentation associated with roosts

MDS

Direct habitat loss will directly impact identified roosts; this includes the loss of one barbastelle maternity roost (R11 – this may no longer be present but has likely been replaced by another roost location in the same vicinity), two other confirmed roost trees, and 48 trees of moderate or high suitability for supporting roosting bats. As part of the Scheme design, areas of woodland have been retained to ensure the overall roost resource (i.e. identified roosts and surrounding habitat) are avoided as far as possible. The construction phase masterplan is provided below. Given the limited extent of the tree roost resource within the Scheme footprint that would be lost and the presence of alternative suitable roosting habitat, this loss would have a minor adverse effect and is not considered to have a significant impact.

Habitat fragmentation also has the potential to indirectly impact roosts at UAF by isolating the identified bat roosts from surrounding habitat. This may cause a reduction in the use (and/or abandonment) and reduction of success of these roosting sites e.g. the long-term success of the maternity roost in UAF B10. Identified mitigation would be appropriately situated to minimise any impacts from fragmentation. This would involve retaining key habitat links between UAF to the wider landscape, as shown below.



AD Sites

No roosts have been identified within any of the AD sites, however the potential for roosting bat presence has been identified through tree surveys (GLTA and aerial surveys – where possible). Fragmentation associated with roosts at each of these sites may occur if roosting bats are present within the site or within 20m of vegetation clearance. This will be mitigated through installation of bat boxes, and planting of woodland and hedgerow to ensure habitat connectivity.

D3 Post-development interference impacts: e.g. extra street lighting or other external lighting, use of loft space as storage, increased noise. Please also consider other direct or indirect post development impacts which may include disturbance/ injuring/killing.

E.g. Security lighting being installed will shine on the brown-long eared bat maternity roost access points which may affect emergence patterns and lead to a reduction in foraging times. This may cause a reduction in the long term success of the breeding colony or cause the roost to be abandoned. Moderate to high negative impact at a site and local level.

Anticipated post-development (operational) long-term impacts on both the MDS and the AD sites relate to bats using the habitats within the site boundaries or crossing the linear features (e.g. SLR and TVB). These are anticipated to persist for the operational phase of the Scheme and as such are considered to be effectively permanent. Predicted indirect impacts comprise mainly noise, lighting and vibration (disturbance) for the operational hours and days. A summary of anticipated operational impacts are provided below, with more detail provided under the following headings where appropriate.

- **Main Development Site** – Impacts will be largely temporary (i.e. once construction is completed habitats will be reinstated and operational impacts will be limited to the platform to the east of the site, and a road which intersects the site from east – west). However, as the construction phase will persist for the duration of the 10 year construction period the impacts arising from this are considered to be operational. Further discussion regarding operational impacts on bats associated with the SLR are provided below.
- **Yoxford and other road improvements** – Operational impacts following the construction of this roundabout will be noise, lighting and vibration associated with the road, however given that this will be works to an existing street-lit road, any adverse operational impacts are anticipated to be minor and cumulative and are not licensable.
- **Sizewell Link Road** – Operational impacts following the construction of this road will be habitat fragmentation, disturbance from noise/vibration and disturbance from light. This may impact upon identified roost resource within the site and around it's boundaries. Further discussion regarding operational impacts on bats associated with the SLR are provided below.

- **Two Village Bypass** - Operational impacts following the construction of this road will likely be noise, lighting and vibration. This may impact upon identified roost resource within the site and around its boundaries. Further discussion regarding operational impacts on bats associated with the SLR are provided below.
- **Green Rail Route and other rail improvements** – Operational impacts following construction will likely be disturbance from noise and vibration, and disturbance from light. Further discussion regarding operational impacts on bats associated with the GRR are provided below.
- **Northern Park and Ride –**
- **Southern Park and Ride –**
- **Freight Management Facility –**

Main Development Site

As previously mentioned, the key commuting corridors for bats using the habitats associated with the MDS are Bridleway 19, the east-west crossroads of Fiscal Policy and Kenton Hills, and the Sizewell Marshes SSSI. An additional period of barbastelle commuting has been noted at the northern corner of the Sizewell Marshes SSSI, with individuals commuting over the reedbeds both to the south (in the direction of the SSSI) and to the north (towards Goose Hill).

A detailed noise modelling assessment by Sharps Redmore was undertaken to determine noise levels generated during construction and how this impact bats using the EDF Sizewell estate. Noise models indicated the likely abandonment of some roosts at UAF during Phases 1 and 2 of construction. The combined effect of lighting and increased human activity are also contributory factors.

Please refer to Arcadis Ecology Technical Note: Approach to assessing the impacts to bats from high-frequency noise.

Lighting, noise and other operational impacts incurred may have negative impacts upon the three known roosts (R11, G36 and AF24), resulting in a reduction in roost use and/or roost abandonment. In addition to the known roosts, these operational impacts will likely cause a reduction in roost suitability of retained woodland blocks within the site and around its boundaries.

Large areas of the Scheme are currently unlit, as such there will be a decrease in dark areas in the vicinity to the identified roost locations. Increased lighting levels during the construction phase has the potential to affect roosts and foraging areas; increasing the magnitude of any habitat fragmentation identified above. A detailed lighting strategy has been produced which will secure three dark corridors connecting the habitats to the north with those to the south as well as other low lights areas and dark site boundaries.

Yoxford Roundabout

No roosts have been identified within the Yoxford site boundary, and very little roosting resource has been identified on-site. Lighting, noise and other operational impacts may have negative impacts on the woodland and tree habitats adjacent to the scheme, however the area is already subject to operational impacts of the existing street-lit road, and therefore construction of a roundabout adjoining existing roads in an already street-lit area is likely to have only a minor cumulative negative impact, which is not licensable.

Sizewell Link Road

No roosts have been identified within the SLR boundary, however 33 trees of High or Moderate roosting suitability have been identified. Lighting, noise/vibration and habitat fragmentation may have negative impacts upon any bats roosting within these identified trees, resulting in a reduction in roost use and/or roost abandonment. In addition to impacts on known roosts, these operational impacts will likely cause a reduction in roost suitability of retained woodland blocks within the site and around its boundaries.

These impacts are all assessed fully in the ES chapter and all determined to be **not significant**.

Two Village Bypass

No roosts have been identified within the SLR boundary, however 33 trees of High or Moderate roosting suitability have been identified. The operational impacts are likely to result from habitat loss/fragmentation, noise and vibration, lighting and incidental mortality.

These impacts are all assessed fully in the ES chapter and all determined to be **not significant**.

Green Rail Route

No roosts have been identified within the GRR boundary, however one tree of High and one of Moderate roosting suitability have been identified. Lighting, noise and vibration may have negative impacts on any bats roosting within these trees, resulting in a reduction in roost use and/or roost abandonment.

These impacts are all assessed fully in the ES chapter and all determined to be **not significant**.

Freight Management Facility

No roosts have been identified associated with the Freight Management Facility. During the operational phase, the main impact pathways on the bat assemblage would be associated with disturbance effects (light, noise and visual).

These impacts are all assessed fully in the ES chapter and all determined to be **not significant**.

D4 Predicted scale of impact of this development/activity on species status (also see section 6.5 of the Bat Mitigation Guidelines and the BCT's Bat Survey Good Practice Guidelines): Please complete the following table to explain what this is likely to be at the site, local/county and regional levels for each roost type and species. Add additional lines when necessary

Roost types to be referenced as: Day, Night, Feeding Perch, Transitional, Satellite, Maternity, Hibernation confirmed, Foraging Area, Commuting Route, Swarming Site, Other.

Species and Numbers (which will be affected at the time works will be undertaken)	Roost type	Predicted scale of impact (place X in relevant column)			Notes (include impact on roost – damage / destruction /modification etc)
		Site	County	Regional	
Woodland bat assemblage. <i>Including Myotis nattereri, Myotis daubentonii and Plecotus auritus.</i>	Hibernation roosts. Foraging area/commuting route			X	Three bat roosts will be lost during works (including one barbastelle and one soprano pipistrelle roost – see rows below). These roosts will be destroyed during construction. In the absence of mitigation the loss of a Natterer's roost (and potentially other roosts to be lost/disturbed) would have a major negative impact at a local level, a moderate negative impact at a county level and a low negative impact at a national level, given the common and widespread status of these species. The loss of a barbastelle roost (if still present) would have a major negative impact at a local level, a major negative impact at a county level, and a moderate negative impact at a national level. In the absence of mitigation, the fragmentation of key flight lines would have the following negative impacts: <ul style="list-style-type: none"> Common pipistrelle, soprano pipistrelle, brown long-eared, <i>Myotis</i> sp., Natterer's – major negative impact on a regional level;
<i>Barbastellus barbastella</i>	Maternity roost. Foraging area/commuting route			NATIONAL	One known barbastelle roost is present within the vegetation clearance zone, although on subsequent survey visits in 2021 this has not been found and may no longer be present. If present (or if the roost has moved within the woodland), the roost may be disturbed during works. There will also be loss and modification of barbastelle commuting routes and foraging areas which will have a major negative impact on a national level.
<i>Pipistrellus pygmaeus</i>	Day roost. Foraging		X		One known roost will be lost during works and there is potential for others to be lost or

	area/commuting route				disturbed. There will also be loss of crossing points and flightlines. Moderate negative impact at a county level.
<i>Pipistrellus pipistrellus</i> <i>Pipistrellus nathusius</i>	Foraging area/commuting route		X		Roosts may be disturbed during works. There will also be loss of crossing points and flightlines. Moderate negative impact at a county level.

****Please note** that you can add more rows to the table: right click in any cell outside the grey box area. Choose Insert > Insert rows below.

Provide further comments/explanation as required (this helps understand how the impacts will be mitigated or compensated for when assessing section E):

As per Bat Mitigation Guidelines, for the purposes of impact assessment and mitigation design, all roosts containing subadult bats of any sex, or pregnant, lactating or post-lactating female bats (with no evidence to the contrary such as those proven to share a roost with other subadults or females through radio-tracking or emergence surveys confirming single bats present) were assumed to be from a unique maternity roost within the woodland, regardless of whether they were tagged and/or tracked back to a roost.

This is to ensure no underestimation of potential impacts and subsequent residual effects take place and ensures adequate mitigation plans based on a worst-case scenario.

In the absence of mitigation, the predicted scale of impacts on the assemblage of woodland bat species, including barbastelle, is significant at national/regional level with respect to fragmentation, isolation, and habitat loss. Roost loss for the woodland assemblage will be significant at regional level.

In the absence of mitigation the predicted scale of impacts on common, soprano and Nathusius pipistrelle is significant at county level with respect to roost loss, fragmentation, isolation and habitat loss.

A licence is not required for habitat fragmentation affecting noctule, serotine or Leisler's bat due to their flight behaviour (high flying species). There is no known roost loss for this species assemblage.

A key consideration to mitigate the loss of the roosts identified, will be the appropriate positioning of replacement roosts, regarding the proposed construction masterplan. Mitigation will be placed in areas of suitable habitat, with connectivity to increase the likelihood of bats locating/ utilising these features and placed to minimise any further disturbance from the construction works.

45 bat boxes have been erected, to the north and south of the site, by EDF in anticipation of the Scheme. Installation of additional bat boxes will be required as mitigation in this licence application.

Important Advice:

Please ensure that a separate 'Impact map' is provided ([Figure D](#)) which must show all structures or habitats (clearly referenced) that will be disturbed, damaged or destroyed, detailing where the roosts and access points are etc. Also see section I "Map checklist" at the end of this document.

E Mitigation and Compensation (please also see section 7 and 8 of the Bat Mitigation Guidelines)

E1 Please explain why this design was chosen over other potential solutions - set out what other designs were considered and why they were not feasible (e.g. if the proposal is to construct a new stand-alone roost, explain why it is not possible to retain the roost in the existing structure etc). The mitigation solution being proposed in the method statement should be the one that delivers the 'need' with the least impact on the bat population.

The Scheme (MDS and AD sites) have been through a number of iterations to ensure that the selected option meets the objectives of the Scheme whilst reducing/minimising the impact on the wider environment and identified sensitive ecological receptors. The location of the temporary construction area (TCA) and related infrastructure was driven by project efficiency requirements e.g. due to the large quantities of construction material required and size of components, it was not considered feasible to locate the TCA in a location remote from the main construction area.

The Scheme has therefore been designed to minimise the number of structures and woodland areas which were identified of significance for roosting and foraging/ commuting bats. By avoiding these important roost sites and valuable woodland areas, it is anticipated that roosts and the wider tree recourse will be protected for bats. However, the final design requires felling of 134 trees of high/moderate value (or confirmed roosts) which are unavoidable, see Figure E1.

The proposed solutions for bat mitigation across the scheme comprise the planting of additional woodland, enhancement of retained woodland, and providing replacement and additional potential roost features (PRFs) for bats within suitable habitat.

For a detailed description of the works and the Scheme's alternatives and design evolution, please refer to the attached appendix - Vol 2: Main Development Site: Chapter 6: Alternatives and Design Evolution.

E2.2 Capture and release (if applicable):

Please confirm that you agree to undertake the following procedures for the capture and exclusion of bats, where these are applicable:

- a. The use of endoscopes, artificial light from torches, destructive search by soft demolition (see Definitions), temporary obstruction of roost access, temporary or permanent exclusion methods (including installation) and use of static hand held nets must only be undertaken or directly supervised by the Named Ecologist, or an Accredited Agent.
- b. Where capture and/or handling of bats are necessary, only the Named Ecologist, Accredited Agent, or an Assistant directly supervised by the Named Ecologist may do so. Capture/handling/exclusion of bats must only be undertaken in conditions suitable for bats to be active.
- c. Where bats are discovered and taken (excluding unexpected discoveries during adverse weather conditions) they must either be relocated to an alternative roost (see Definitions) suitable for the species, or where bats are held this must be done safely and bats released on site at dusk in, or adjacent to, suitable foraging/ commuting habitat in safe areas within or directly adjacent to the pre-works habitat.
- d. Endoscopes and hand held nets are only to be used to assist with the locating and capture of bats.
- e. Temporary and permanent exclusion must be carried out using techniques specified in the most up to date edition of the '*Bat Workers Manual*'. If one-way exclusion devices are to be used, each device must remain in position for a period of at least 5 consecutive days/ nights throughout a spell of suitable weather conditions, or remain longer until these conditions prevail.
- f. Prior to destructive works, an inspection using torches and/or an endoscope must be performed internally to search for the presence of bats. If any licensed vesper bat species is found and is accessible, each will be captured by gloved hand or hand-held net, given a health check and then each placed carefully inside a draw-string, calico cloth holding bag or similar for transport. If any licensed horseshoe bat species is found, the capture methods outlined in (h) will only be used after it has been shown that overnight dispersal or exclusion are no longer practicable methods.
- g. Following inspection and exclusion operations, the removal of any feature with bat roost potential, will be only performed by hand in suitable weather conditions and under direct ecological supervision. Where applicable, materials will be removed carefully away and not rolled or sprung to avoid potential harm to bats. The undersides of materials will be checked by the Named Ecologist or Accredited Agent for bats that may be clung to them before removal.
- h. For sites where the presence of horseshoe species has been confirmed, the following exclusion method will be used: prior to work commencing, the Named Ecologist or Accredited Agent will conduct a thorough internal inspection for the presence of horseshoe bats. Only after the void is shown to be unoccupied will the destructive search commence, or all apertures into that void be closed and sealed (windows, doors, etc) by use of boarding, sealed tarpaulin or similar.

If a horseshoe bat is encountered, it will be left undisturbed during daylight. After all bats have dispersed overnight, the void will be sealed as described above. If all bats have not emerged, the Named Ecologist will either use torchlight and non-tactile human presence to disturb the bat to encourage it to emerge and disperse, during night only, or through use of a hand held net. Only after all bats have emerged from the building or void will it be sealed.

Yes, I agree / No, I don't agree

If NO, please provide justification below. Please use this text box to describe any additional information on protocols to be employed if bats are found during works. Non-standard capture and exclusion apparatus must be shown on **Figure E2**.

The indicative timing of planned works is provided within the Works Schedule. Works are planned to avoid the bat maternity season. One barbastelle maternity roost has been identified within the woodlands to be impacted, and many of the habitats (particularly woodlands) within the MDS and AD sites are considered suitable for breeding bats.

The primary approach to tree felling is proposed to be via machinery due to the safety management of tree felling operations in woodlands. Mechanical demolition will be preceded by bat inspections and exclusion procedures, with the appropriate safeguards to ensure exclusion measures remain effective until trees are felled. This methodical stated approach (inspection and exclusion then felling) allows groundworks to be carefully managed, keeping work sites well organised, thus reducing the potential risk of health and safety incidents.

All bat related tree works will be undertaken by the Named Ecologist and / or the 'accredited agents' (AAs). Accredited agents will be suitably experienced ecologists with Natural England Level 2 Class (CL18) licences or similar demonstrable experience who have been approved by and will be working under the direction of the named ecologist. All activities will be supervised by an Ecological Clerk of Works (hereafter the ECoW Site Supervisor) approved by the Named Ecologist, and all works, actions and bats encountered will be fully documented.

A pre-fell decision tree has been developed (as shown in Appendix B) to ensure consistency in decisions made by accredited agents and the Named Ecologist. Guidance with examples on suitable one-way exclusion devices is provided in Appendix C in addition to guidance detailed in the Bat Workers Manual (see section 'E2.2 e' above).

Re-grading of the potential of trees (high/moderate/low) to support bats will be undertaken at the discretion of the accredited agents or the Named Ecologist. The loss of obscuring vegetation in winter allows for a clearer assessment of trees and Potential Roost Features (PRFs) from the ground in early spring. Any re-survey via ground-based inspection (BT1) or tree climbing inspection (BT2) will be documented and reported to Natural England as part of a preliminary/interim licence return. The following protocol therefore applies to all trees subject to felling that are considered by the accredited agents or Named Ecologist to have PRFs suitable to support roosting bats.

All trees declared clear of bats and approved for felling by the accredited agents or Named Ecologist will be positively marked for felling and recorded.

Additional non-standard protocols not covered by Natural England conditions a-h:

1. **For trees that are safe to climb and with Potential Roost Features (PRFs) that can be reached / accessed**, pre-felling inspections will be undertaken on the same day as exclusion or felling of the PRF. All surveys will be undertaken by accredited agents equipped with an endoscope (with 1m minimum length cable);
2. **Where a PRF contains bats**, they will be removed where possible in line with Natural England capture and release procedures (see sections a-h above) or one-way excluders fitted where appropriate. Prior to further licensable works, the tree will be re-inspected. Once confirmed by the Named Ecologist or AA that the tree roost contains no bats and that it can be fully inspected, other licensable actions can be undertaken. Felling will either take place on the same day as the bat inspection or the roost will be made permanently unsuitable for bats, via destruction, soft-felling or permanent exclusion of bats. The action undertaken will be recorded.
3. **Where a PRF contains no bats**, following confirmation by an accredited agent or the Named Ecologist that the feature can be fully inspected, the tree or PRF will be felled / removed or permanently excluded. Inspection and removal/exclusion of a PRF will occur on the same day – any delay will require a further inspection prior to exclusion/felling. Exclusion measures will be inspected regularly to ensure they are fit for purpose and a final inspection of the exclusion device will be made on the same day as tree felling. Where exclusion measures have failed, PRFs will be re-inspected prior to PRF removal or further exclusion attempts. Excluded PRFs will primarily be felled with machinery to manage safety of tree felling operations.

1. **Where bats within a roost cannot be captured or excluded using one-way exclusion**

devices consideration will be given to the range of options available to the Named Ecologist or accredited agents to establish whether bats are present or absent and how best to fell the tree. The options include undertaking additional emergence / re-entry surveys, repeat climbing inspections, or soft felling as detailed in point 6 below. A decision on the approach to be taken will be based on the nature of the PRF, associated safety considerations, the anticipated effectiveness of emergence / re-entry surveys given the time of year, and the ability to soft-fell safely.

Where emergence / re-entry surveys are undertaken, these will make use of thermal imaging (TI) or Infra-Red (IR) cameras in-line with BCT Guidelines (Collins, 2016).

2. **Where a tree cannot be climbed or inspected due to safety, or a PRF cannot be fully inspected** the considerations and measures outlined in point 4 above will be followed.
3. **Where soft felling is required as the presence of bats within a PRF cannot be determined, or safety constraints precludes other methods**, the feature will be soft felled in conjunction with an experienced arborist. Where safe to do so, PRF sections will be cut away and lowered to the ground and inspected by an accredited ecologist or the Named Ecologist. Any bats found will be moved in line with Natural England capture and release procedures (see sections a-h above) with consideration given to anchoring the section felled PRF into a nearby suitable tree. Where required, PRFs will be left in-situ on the ground within a 10m exclusion zone for 24 hours; and,
4. **Following successful bat capture** by an accredited agent or the Named Ecologist, a health check of the bat will be undertaken (see NE capture and release procedures a-h above). The bat will then either be transported immediately to a pre-installed bat box / roost mitigation feature in the same woodland parcel where access is possible, or kept in a suitable container until dusk and released near the site of capture. Bats kept in captivity and released at dusk will be cared for in line with the Bat Care Guidelines (Miller 2016).
5. All licensable works, bats captured and subsequent actions will be recorded and documented by the accredited agents approved by the Named Ecologist.

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

Miller, H. (ed.) (2016) Bat Care Guidelines (2nd edn). The Bat Conservation Trust, London.

Should your proposals include capture (taking) please specify numbers of each species that will be affected at the time the works are to be undertaken:

Species	Expected number of bats to be captured at the time works will be undertaken. <i>Note: this may be different to the number of bats using the roost at its optimum time as timings for works will be at a time when bats are least likely to be present.</i>
<i>Pipistrellus pipistrellus</i>	20 – during rescue inspections / soft fell
<i>Pipistrellus pygmaeus</i>	30 – during rescue inspections / soft fell
<i>Plecotus auritus</i>	20 – during rescue inspections / soft fell
<i>Myotis nattereri</i>	15 – during rescue inspections / soft fell
<i>Myotis daubentonii</i>	10 – during rescue inspections / soft fell
<i>Barbastellus barbastella</i>	5 – during rescue inspections / soft fell
<i>Nyctalus noctula</i>	4 – during rescue inspections / soft fell
<i>Nyctalus leisleri</i>	4 – during rescue inspections / soft fell
<i>Eptesicus serotinus</i>	1 – during rescue inspections / soft fell
The captured bat numbers provided above are an educated guess based on the results of the desk study, ALBST surveys, the time of year for the planned works (spring) and the broad proportions of bats found utilizing the licence area.	

** Please note that you can add more rows to the table: right click in any cell outside the grey box area. Choose Insert > Insert rows below.

E3 Bat roost and access point retention, modification and creation: Please detail how all impacts to each species (as identified in sections C and D) will be mitigated. If not applicable to your proposals please state 'N/A' in the relevant text boxes.

Please note that breathable roofing membranes must not be installed into a roof used by bats. If the use of roof membranes is necessary, only Bitumen type 1F felt with a hessian matrix will be permitted under licence:

N/A

E3.1 Retention of existing roost(s) – *Works may include, for example, maintenance works that result in no material changes to the roost but may cause disturbance or temporary damage e.g. temporary exclusion of a roost to allow investigative and repair works to a bridge.* Provide details of all works including:

- Number and description of roosts to be retained, with an explanation of how they will be retained. Confirm dimensions to be retained.

The 2021 aerial tree inspection surveys focussed on identifying roosts and roosting resource within the vegetation removal zone licence area, however it is likely that other roosts are present within woodland to be retained.

- Number of access/entrance points to be retained and how this will be achieved. If enhancements to the roosts will be provided, such as through crevice provision, please detail.

N/A

- Mitigation for any other impacts e.g. new lighting at the site.

Lighting is expected to increase across the Scheme during the construction phase. The Lighting Management Plan secures dark corridors, further low light areas and dark site boundaries as well as other measures to reduce light levels. Felling trees would be undertaken in daylight hours.

The noise (chainsaws and other machinery) resulting from clearance/felling of trees will be in daylight hours and may indirectly affect other roost sites in the area. Such noise will be relatively short term in nature and undertaken in conjunction with other ecologically supervised works associated with PRF inspections. Unnecessary noise by contractors will be managed through toolbox talks and direct supervision by qualified ecologists approved by the Named Ecologist for the Mitigation Licence.

E3.2 Modification of existing roost(s) - *Works may include, for example, reduction in roof void height, change of tiles and roof lining (stating the type of membrane that will be used), alteration of access point through replacement of soffits etc.* Please provide the following:

- Dimension details of modified roosts: clearly state what the original roost dimensions were and what the dimensions of the modified roost will be.

Although no roosts are known within the 20m impact area, roosting resource has been identified and it is likely that roosts will be present and these will be impacted by changes to the microclimate caused by vegetation loss, temperature changes and noise/lighting disturbance. This may lower the suitability of the roost resource of these trees, however this will be mitigated through enhancement of other woodland and trees in the surrounding landscape will be enhanced so that it supports greater roosting resource.

- Dimension details of modified access points: clearly state how the access points are being modified.

N/A

- Details of any other modifications to be made to roosts.

N/A

- Mitigation for any impacts of lighting on the modified roost/s if appropriate.

E3.3 New roost creation (including bat houses, cotes and bat boxes etc).

Note – creation of compensation for high impact cases (e.g. loss of a maternity roost) must be protected in the long term. Any bat boxes or roost structures that are part of a licence proposal which do not show signs of bats must be retained for a minimum of 5 years from date of completion of the development/works. Typically this will be around 5 years for low conservation status roost compensation (e.g. bat boxes) and longer for other significant roosts (e.g. bat houses, lofts etc). The exact time period will be specified in any licence issued. For high conservation status roost loss, the compensation roost/s must still be protected in the long term by another means (such as a s106 agreement), which is particularly important if the structure is likely to change ownership.

E3.3a Please complete the table below for the species and roost types listed. For all other species and roost types please provide information under **E3.3b**.

Species & Roost type for which new roost creation will be provided	New roost creation		
	Compensation should be in line with the <i>Bat Mitigation Guidelines</i> . Where compensation is being provided, there should be at least one compensation feature, suitable for the species concerned, per roost and per species to be impacted, OR If a proposal impacts more than one bat species and / or roost type then cumulative impacts must be considered when designing the compensation; this should always be in line with the species and / or roost type which will be subject to the greatest impact and ensure that the requirements of all species impacted are met.		
	Compensation Feature	Quantity	Location of Compensation Feature (as shown on Figure E3)
Common pipistrelle <input checked="" type="checkbox"/> Yes <input type="checkbox"/> N/A Day roost Night roost Feeding Transitional/Occasional	<input checked="" type="checkbox"/> Bat box <input type="checkbox"/> Integrated bat box/ bat brick/ bat tube <input type="checkbox"/> Bat tile (including ridge tile) <input type="checkbox"/> Other (specify): <input type="checkbox"/> None	Trees - Ratios as defined in Section A.	<input type="checkbox"/> In same building <input type="checkbox"/> In other existing building on site <input type="checkbox"/> In new building <input checked="" type="checkbox"/> Other (specify): On suitable retained trees within the red line boundary (licence area) at varying aspects to provide a variety of roosting habitats.
Soprano pipistrelle <input checked="" type="checkbox"/> Yes <input type="checkbox"/> N/A Day roost Night roost Feeding Transitional/Occasional	<input checked="" type="checkbox"/> Bat box <input type="checkbox"/> Integrated bat box/ bat brick/ bat tube <input type="checkbox"/> Bat tile (including ridge tile) <input type="checkbox"/> Other (specify): <input type="checkbox"/> None	Trees - Ratios as defined in Section A.	<input type="checkbox"/> In same building <input type="checkbox"/> In other existing building on site <input type="checkbox"/> In new building <input checked="" type="checkbox"/> Other (specify): On suitable retained trees within the red line boundary at varying aspects to provide a variety of roosting habitats.
Whiskered <input type="checkbox"/> Yes <input checked="" type="checkbox"/> N/A Day roost Night roost Feeding Transitional/Occasional	<input type="checkbox"/> Bat box <input type="checkbox"/> Integrated bat box/ bat brick/ bat tube <input type="checkbox"/> Bat tile (including ridge tile) <input type="checkbox"/> Other (specify): <input type="checkbox"/> None		<input type="checkbox"/> In same building <input type="checkbox"/> In other existing building on site <input type="checkbox"/> In new building <input type="checkbox"/> Other (specify):
Brandt's <input type="checkbox"/> Yes <input checked="" type="checkbox"/> N/A Day roost Night roost Feeding Transitional/Occasional	<input type="checkbox"/> Bat box <input type="checkbox"/> Integrated bat box/ bat brick/ bat tube <input type="checkbox"/> Bat tile (including ridge tile) <input type="checkbox"/> Other (specify): <input type="checkbox"/> None		<input type="checkbox"/> In same building <input type="checkbox"/> In other existing building on site <input type="checkbox"/> In new building <input type="checkbox"/> Other (specify):

Daubenton's <input type="checkbox"/> Yes <input checked="" type="checkbox"/> N/A <i>Day roost</i> <i>Night roost</i> <i>Feeding</i> <i>Transitional/Occasional</i>	<input type="checkbox"/> Bat box <input type="checkbox"/> Integrated bat box/ bat brick/ bat tube <input type="checkbox"/> Bat tile (including ridge tile) <input type="checkbox"/> Other (specify): <input type="checkbox"/> None		<input type="checkbox"/> In same building <input type="checkbox"/> In other existing building on site <input type="checkbox"/> In new building <input type="checkbox"/> Other (specify):
Natterer's <input checked="" type="checkbox"/> Yes <input type="checkbox"/> N/A <i>Day roost</i> <i>Night roost</i> <i>Feeding</i> <i>Transitional/Occasional</i>	<input checked="" type="checkbox"/> Bat box <input type="checkbox"/> Integrated bat box/ bat brick/ bat tube <input type="checkbox"/> Bat tile (including ridge tile) <input type="checkbox"/> Other (specify): <input type="checkbox"/> None	Trees - Ratios as defined in Section A.	<input type="checkbox"/> In same building <input type="checkbox"/> In other existing building on site <input type="checkbox"/> In new building <input checked="" type="checkbox"/> Other (specify): On suitable retained trees within the red line boundary at varying aspects to provide a variety of roosting habitats.
Brown long-eared <input checked="" type="checkbox"/> Yes <input type="checkbox"/> N/A <i>Day roost</i> <i>Night roost</i> <i>Feeding</i> <i>Transitional/Occasional</i>	Note: boxes for this species will only be acceptable in certain circumstances, where this is justified on an ecological basis <input checked="" type="checkbox"/> Bat box, justification <input type="checkbox"/> Other (specify): <input type="checkbox"/> None		<input type="checkbox"/> In same building <input type="checkbox"/> In other existing building on site <input type="checkbox"/> In new building <input type="checkbox"/> Other (specify): On suitable retained trees within the red line boundary at varying aspects to provide a variety of roosting habitats.
Serotine <input type="checkbox"/> Yes <input checked="" type="checkbox"/> N/A <i>Day roost</i> <i>Night roost</i> <i>Feeding</i> <i>Transitional/Occasional</i>	Note: bat boxes are not suitable for this species. Compensation should replicate, as closely as possible, the existing roost: <input type="checkbox"/> Bat tile <input type="checkbox"/> Bat brick <input type="checkbox"/> Other (specify):		<input type="checkbox"/> In same building <input type="checkbox"/> In other existing building on site <input type="checkbox"/> In new building <input type="checkbox"/> Other (specify):
Lesser Horseshoe <input type="checkbox"/> Yes <input checked="" type="checkbox"/> N/A <i>Day roost</i> <i>Transitional/Occasional</i>	A proportionate number of bat features suitable for the species. The provision of one feature, suitable for the species concerned (eg void) per roost to be impacted will be considered appropriate: Specify:		<input type="checkbox"/> In same building <input type="checkbox"/> In other existing building on site <input type="checkbox"/> In new building <input type="checkbox"/> Other (specify):

E3.3b For all species and roost types not covered in the above table please provide the following:

- New roost dimension details or features (to include bat tiles/boxes as applicable).

Trees:

In order to mitigate for the loss of the roost sites, prior to works commencing, the minimum ratio of replacement roosting features will be installed with ratios as set out below:

- 1:1 potential roosting features.
- 2:1 low status roost of common species.
- 4:1 maternity roosts of common species.
- 4:1 low status roost of Annex 2 species.

Replacement features will comprise of a combination of:

- Bat boxes – positioned on suitable retained trees within the red line boundary at varying aspects to provide a range of roosting conditions;
- Totems/monoliths;
- Translocations of existing roost features; and
- Veteranisation of trees.

The roosts to be impacted (directly or indirectly) at the MDS and AD sites and the number of roost mitigation features required are detailed in the table below.

E3.3b Table 1 – Details of roosts and PRFs to be lost and number of replacement features required

Species	Site	Roost type	Number affected directly	Number affected indirectly	Compensation ratio	Number of compensatory roost mitigation features required
<i>Pipistrellus pygmaeus</i> ,	MDS	Day	3	0	2:1	6 (all bat boxes)
<i>Barbastella barbastellus</i>	MDS	Maternity	2	0	4:1	8 (all bat boxes)
<i>Myotis nattereri</i>	MDS	Hibernation	1	0	2:1	2 (all bat boxes)
N/A	MDS	High or moderate potential roost features	224	N/A	1:1	224 (at least half generated naturally or created through veteranisation within new woodland planting)
N/A	SLR	High or moderate potential roost features	102	N/A	1:1	102 (at least half generated naturally or created through veteranisation within new woodland planting)
N/A	SPR	High or moderate potential roost features	6	N/A	1:1	6 (all bat boxes)
N/A	GRR	High or moderate potential roost features	2	N/A	1:1	2 (all bat boxes)
N/A	FMF	High or moderate potential roost features	1	N/A	1:1	1 (bat box)
N/A	TVB	High or moderate potential roost features	56	N/A	1:1	56 (at least half generated naturally or created through veteranisation within new woodland planting)

These replacement features will be positioned on suitable retained trees/in suitable locations within the red line boundary at varying aspects to provide a range of roosting conditions.

Initial / short-term provision 0 – 15 years: 216 bat boxes

- A total of 216 bat boxes will be mounted on suitable trees (approximate locations shown in Figure E4i) prior to works commencing. There will be approximately 1 – 3 bat boxes per tree. These boxes will remain in place and suitable for bats for 15 years. This number of bat boxes ensures that all roosts lost are adequately mitigated for immediately. Bat boxes will also be placed on any trees within the vegetation clearance zone if this permits (this currently cannot be determined).
- At the same time as the bat boxes are placed, there will be some management of existing woodlands, such as thinning works to achieve a varied age structure. This will provide additional benefits for bats by improving foraging opportunities in these woodlands.

Medium term provision 15 – 30 years: 216 bat boxes

- Replacement of bat boxes after 15 years.

Medium / long-term provision 70+ years: 191 PRFs

- Maturation of broadleaf woodland planting through natural formation of Potential Roost Features (PRFs) in the very long-term will create at least another 191 PRFs.

Any additional confirmed roosts discovered during bat rescue procedures will be compensated by additional bat boxes or similar mitigation features as per the ratios detailed above.

All roost mitigation features will be erected or created in suitable habitats within or adjacent to the licence area. Rescue bat boxes will be erected adjacent to the impacted area under the direct supervision of the Named Ecologist / accredited agents.

Figures E3i, E3iii, E3v, E3vii and E3x detail the habitat areas included as mitigation and compensation for bats.

Where bat boxes are the selected roost mitigation feature, Table 2 below lists suitable bat box types for the different bat species and roost types identified.

E3.3b Table 4 – Suggested bat box types to mitigate for impacts to different species and roost types

Species	Type preferred	2F	1FF	2FN / 3FN	Kent	Eco Kent	Improved Crevice bat box (ICRBB)	Improved Cavity bat box (ICABB)	1FS / 1FW Maternity / hibernation
Soprano pipistrelle	Crevice	✓	✓		✓	✓	✓		✓
Common pipistrelle	Crevice	✓	✓		✓	✓	✓		
Nathusius pipistrelle	Crevice	✓	✓		✓	✓	✓		
Natterer's	Cavity	✓		✓				✓	
Daubenton's	Cavity	✓		✓				✓	
Whiskered/Brandts	Crevice/cavity	✓	✓			✓	✓	✓	
Brown long-eared	Cavity	✓	✓	✓				✓	✓
Noctule	Crevice/cavity	✓	✓	✓			✓	✓	✓
Leisler's	Crevice/cavity	✓	✓		✓	✓	✓	✓	

- Access points and size of access points.

Main Development Site: Bat Houses

Accesses at gable ends (approx. 30 x 50mm), at eaves, soffits and in the roof skin (i.e. access slates / tiles). Maximise gable-end provision. Minimum two gable ends with access, ideally 4, one at each direction. Unobstructed flying spaces in roof (i.e. no internal beams supporting the roof, king posts, struts etc.). Ridge tiles not to be fully cemented down to create void. Overhanging soffits.

- Location details (including an 8-figure grid reference for bat houses or bat lofts relating to the structure. 8-figure grid references are not required for positions of individual boxes, tiles etc).

Structure will be located close to existing flight lines. Surrounded by vegetation insofar as is possible and where necessary additional planting in the vicinity of the bat house, to improve habitat connectivity to the existing flight paths.

- Aspect. Explain how the internal conditions of the roost will be created.

Structure will be 5m x 4m minimum and will have free flying areas; baffles, hot boxes, cooler areas, hanging tiles, crevices and wooden hibernation boxes.

- Details of the materials to be used e.g. timber, sarking, felt etc.

Structure of wood, with cladding / weatherboarding. Can also be masonry / block if required. Ideally one cavity wall at north aspect with 15mm x 50mm access. Pitched roof, pitch as steep as possible. Dark coloured slates / tiles if possible. Membrane under tiles / slates to be roofing felt, **not breathable roof membrane**. Will need to deter vandalism / unauthorised access. 'water pumping house' or similar sign can be used as a deterrent.

- Justification for any variation from the original roost and/or deviations from recommendations in the Bat Mitigation Guidelines. (*Diagrams of widely available standard bat box designs are not required; just refer to bat box name and reference number, e.g. Schwegler 1FF*).

N/A

- Mitigation for any impacts of lighting if appropriate.

No lighting directly on the roost, particularly not access points for bats. dark corridor to the building from off-site and adjacent habitats.

- Structures for access for monitoring / maintenance purposes (if applicable)

Through trapdoor in floor to roof. Locked door to structure at ground level.

E3.4 Other habitat re-instatement or creation (e.g. retention of existing flight lines, retention or creation of appropriate vegetation around roost entrances where applicable) – please include details of:

- Habitat replacement (following works resulting in temporary impacts) or creation not covered by sections E2 to E3 such as hedgerow/woodland planting or enhancement. State the length of hedgerow planting and areas (ha) of other planting to be provided such as woodland and anticipated establishment period etc.

The majority of the woodland resource within the EDF Energy estate would be retained including the line of broadleaved trees on the northern edge of Kenton Hills, known to support features of importance for roosting bat species.

An earth bund with grass/ seeding, 5m in height, will be placed along the southern boundary of the temporary construction area to screen the adjacent retaining landscape and ecological receptors. This may be replaced locally by a 5m high close boarded wooden fence. Additional boundary treatments are included in the construction masterplan to minimise noise, lighting and visual disturbance to adjacent habitats.

The Scheme will likely result in fragmentation of habitats; however, this will be mitigated by landscape planting which will improve connectivity across the Scheme. In addition to the loss of roosts the wider Scheme will lead to removal of woodland and hedgerow habitats which may cause the displacement of small number of foraging or commuting bats. The strongest commuting routes/ flight paths (north of Ash Wood and The Grove and along the northern edge of Kenton Hills) and habitats of high value for foraging (Ash Wood, parts of Upper Abbey Bridleway, Kenton Hills/Nursery Covert) will also be retained.

The creation of the SSSI crossing (open-span bridge) will link Ash Wood, Plantation Cottage Woodland and further north through Black Walks and The Grove.

Key commuting routes for bats have been retained within the development. These include a commuting route along Bridleway 19 running north to south through the development, a commuting route along the north of Kenton Hills, a commuting route through the SSSI crossing (as mentioned above) and along a retained section of Goose Hill. An new additional commuting route has also been secured between Kenton Hills in the south and Ash Wood in the north centred on two proposed water management zones, with retained and new trees lines.

A Terrestrial Ecology Monitoring and Mitigation Plan (TEMMP) has also been produced, which defines the ecological monitoring and associated mitigation that will be deployed in relation to bats, during construction and operation, in order to monitor and respond to impacts of the proposals. This relates to roosts in trees subject to removal and those to be retained, roosts in buildings, bat boxes and proposed bat barn, commuting routes and foraging activity across the site.

- Creation of flight lines/routes of connectivity.

N/A

- Foraging area enhancements, etc

Discussed in section D.4 of this application.

- Mitigation for any impacts of lighting if appropriate.

A detailed lighting strategy will be implemented in accordance with the Lighting Management Plan for Construction and Operation Sites. The management plan outlines the site context including the lighting baseline conditions and environmental considerations, lighting during the construction and operation phases and the required mitigation measures.

E3.5 Wider biodiversity gains:

Please indicate if enhancements, over and above what is necessary to mitigate the impact of the activity of the licence proposal, are being provided. Please indicate if enhancements are included to satisfy the requirement of a planning permission, and if so state the relevant planning condition, or other consents in

your response below. Please also state if an applicant wishes to provide more than is typically required to mitigate for the impacts. Enter N/A if this is not applicable to your application.

Note: Any licence granted will only cover mitigation and compensation required to fulfill licensing requirements, but will acknowledge additional biodiversity enhancements.

Extensive habitat creation, detailed below, has been undertaken in relation to the MDS and although not specifically aimed at bats, it is believed that the habitat will provide valuable foraging habitat for bats in the landscape.

- 5ha of wetland (reedbed) has already been established at Aldhurst Farm together with approximately 60 ha of acid grassland.
- 10ha of species-rich acid grassland at Broom Covert has been taken out of intensive cattle grazing and grassland and scrub allowed to recover and re-establish as part of the reptile mitigation.
- 40ha of acid grassland with 40% scrub planting has been established on former arable fields as part of the reptile mitigation.
- 40ha of grassland and scrub planting will be established to provide foraging habitat for marsh harrier.

Extensive habitat creation and restoration post-construction of the EDF estate to heath and acid grassland will result in a net benefit to foraging bats and be more favourable to existing habitats which include large areas of arable farmland.

Biodiversity net gain has been considered and calculated for the site in a separate Biodiversity Net Gain Report and the Scheme will deliver an increase in biodiversity unit values for habitats of 15.59% and an increase in biodiversity unit values for hedgerows of 94.41%.

An Outline Landscape and Ecology Management Plan (OLEMP) outlines management actions to return existing arable land on the EDF Energy estate post-construction to Suffolk Sandlings habitat comprising acid grassland and heathland once the temporary construction area is removed. Across the wider EDF Energy estate, outwith the RLB, the existing habitats are being enhanced and managed in accordance with the Estate Wide Management Plan.

In the operational phase of the development, this landscape-scale habitat creation approach would replace existing intensively managed arable farmland with habitats of greater biodiversity value and would increase habitat connectivity, please refer to the Environmental Statement Vol 2: Chapter 14 and also the Estate Wide Management Plan.

Important Advice:

Scaled maps/plans of mitigation/compensation must be provided as separate maps/figures (also **see section I "Map checklist" at the end of this document**):

- **Figure E2** if non-standard capture and exclusion apparatus is proposed please include diagrams/photographs.
- **Figure E3** to show specifications for mitigation / compensation to be provided and annotate where it will be provided. Should the scheme be large or complicated it may be necessary to submit more than one figure.

NOTE: It must be possible to compare these with the survey results plan (**Figure C6**) and 'Impacts' Figure (**D**).

E4 Post-development site safeguard: Further guidance and explanation on post-development monitoring requirements are included within our 'How to get a licence' document http://www.naturalengland.org.uk/Images/wml-g12_tcm6-4116.pdf. Also see Section 8.7 of the Bat Mitigation Guidelines.

E4.1 Habitat/site management and maintenance: Is any specific post-development habitat management and site maintenance planned? If 'No'; state 'N/A'. If 'Yes' include the following:

- The period (years and months) for which habitat management and maintenance will take place. Ensure that this is consistent with the post development works detailed in section **E5b** of the **Work Schedule document, WML-A13-a-E5a&b**.

Throughout construction a suitably qualified ecologist will be available to resolve uncertainties regarding ecological issues and to monitor compliance with good practice mitigation measures as defined in the CEMP and the dedicated method statement.

Initial monitoring will be undertaken to ensure measures have been installed to the correct specification and to inform any remedial measures.

A Terrestrial Ecology Monitoring and Mitigation Plan (TEMMP) has also been produced, which defines the ecological monitoring and associated mitigation that will be deployed in relation to bats, during construction and operation, in order to monitor and respond to impacts of the proposals. This relates to roosts in trees subject to removal and those to be retained, roosts in buildings, bat boxes and proposed bat barn, commuting routes and foraging activity across the site.

- Details of what will be undertaken in terms of site maintenance required to ensure long-term security of the affected population (e.g. maintain, repair or reinstate access points; maintain and repair heaters and /or data loggers; maintain, repair or restore bat feature / bat loft in good condition; repair or replace inspection hatches; management and maintenance of lighting regime, or bat boxes etc).

The maternity/ hibernation roost structure will be checked for usage in September by the named ecologist/ accredit agent on an annual basis during the construction phase form one year after installation. The structure would continue to be monitored for five years beyond the completion of construction.

The bat boxes will be checked for usage in September by the named ecologist/accredited agent on an annual basis during the construction phase form one year after installation. Boxes would continue to be monitored for five years beyond the completion of construction.

Any boxes that require maintenance/repair/replacement will only be moved once they have been inspected by the named ecologist/accredited agent to ensure no bats are disturbed.

The conditions of the habitats in the vicinity of the bat boxes will also be checked by the named ecologist/accredited agent and any necessary management requirements reported back to EDF.

- Details of what will be undertaken in terms of habitat management (e.g. planting cover around roost structure, hedgerow management regime, checking establishment of habitat creation; reduction of shade around roosts, woodland management to maintain species and structural diversity etc). Ensure this relates to the relevant map.

Habitat removal across the site is considered temporary during the construction phase of the Scheme. The CEMP and OLEMP produce for the Scheme outline habitat management during construction and post construction measures to reinstate areas of habitat. Across the wider EDF Energy estate, outwith the RLB, the existing habitats are being enhanced and managed in accordance with the Estate Wide Management Plan.

In the operational phase of the development, this landscape-scale habitat creation approach would replace existing intensively managed arable farmland with habitats of greater biodiversity value and would increase habitat connectivity, please refer to the Environmental Statement Vol 2: Chapter 14 and also the Estate Wide Management Plan. Supplementary scrub planting and strengthening of hedgerows and woodland margins and some new woodland blocks are included within the proposals.

Note – for phased or multi-plot developments a separate habitat management and maintenance plan is required, which must be submitted with the master plan: see guidance on phased developments.

Important Advice:

Please include **Figure E4** as a separate figure to show which structures and habitats will be managed, maintained and monitored post development as part of your proposal – also see *section I "Map checklist" at the end of this document*).

E4.2 Population monitoring, roost usage etc: This should be in line with the monitoring requirements detailed in the Bat Mitigation Guidelines section 8.7 and Figure 4.

E4.2a Please complete the table below for the species and roost types listed. For all other species and roost types please provide information under E4.2b.

Species	Roost type	Post-development monitoring requirement
Common pipistrelle Soprano pipistrelle Whiskered Brandts Daubenton's Natterer's Brown long-eared	Day roost Night roost Feeding Transitional/Occasional	<input type="checkbox"/> None. There is no post-development requirement for proposals affecting bat roosts supporting up to any 3 species indicated, of the roost types listed, where they are used by low numbers of each species. <input type="checkbox"/> A single presence / absence survey at an appropriate time of year is to be undertaken. This should not take place in the first year following completion of development.

		Timing (year): <input checked="" type="checkbox"/> Other (specify): Bat boxes provided as mitigation for roost losses will be subject to a robust monitoring scheme to gather data on compensatory roost uptake related to the Proposed Scheme as per the EcMS.
Serotine	<i>Day roost</i> <i>Night roost</i> <i>Feeding</i> <i>Transitional/Occasional</i>	<input type="checkbox"/> A single presence / absence survey at an appropriate time of year is to be undertaken. This should not take place in the first year following completion of development. Timing (year): <input type="checkbox"/> Other (specify):
Lesser Horseshoe	<i>Day roost</i> <i>Transitional/Occasional</i>	<input type="checkbox"/> A single presence or absence survey at an appropriate time of year to be undertaken in year 2 post development plus a check of the condition and suitability of the roost. <input type="checkbox"/> Other (specify):

E4.2b For all species and roost types not covered in the above table please include details of:

- Timing – state the years and months post development monitoring or other will be undertaken. Ensure that is consistent with the post development works detailed in section **E5b** of the **Work Schedule document WML-A13-a-E5a&b**.

The programme of monitoring will be informed by the programme of works. Any changes to the programme of works will be used to inform the detailed programming of the post-tree clearance monitoring.

A Terrestrial Ecology Monitoring and Mitigation Plan (TEMMP) has been produced (and the relevant sections summarised below), which defines the ecological monitoring that will be deployed in relation to bats, during operation, in order to monitor and respond to impacts of the proposals. This relates to roosts in trees subject to removal and those to be retained, roosts in buildings, bat boxes and proposed bat barn, commuting routes and foraging activity across the site.

Monitoring to assess impacts on known roosts, noise and lighting

During the 12 year construction phase, annual monitoring will be conducted of:

- known roosts and wider roosting resources;
- areas which have been assessed as being sensitive to disturbance from noise/light;
- noise levels at the work site and the ongoing usage of roosts compared to baseline surveys;
- lighting levels (to be monitored during bat surveys).

Monitoring will take place in the correct season, i.e. checks for maternity roosts will take place in the summer, checks for hibernation roosts will take place in the winter.

Roost monitoring will cover areas of trees . It will assess the usage of roosts and roost resources (to account for roost switching) and this will be compared to the baseline status. Where significant changes to the baseline status are identified, interventions will be conducted. Monitoring approach for roosts will depend upon status, species, location etc. Roosts within structures will be assessed through internal inspections and/or emergence surveys. Roosts within trees will be assessed through tree climbing inspections. Where roosts are only used sporadically, static detectors may be employed.

The success criteria for roost monitoring will be that roosts continue to be utilised with no significant changes in use (number of bats or roost type).

Noise monitoring will be undertaken during the construction phase, including an assessment of high frequency noise at appropriate heights of relevance to bats. This will be compared to foreseen levels and should any discrepancies be encountered then remediation actions would be undertaken as appropriate. The success criteria for noise monitoring will be that high frequency noise is at levels or below levels predicted within the noise modelling.

Light monitoring, including the usage of handheld lux detectors would be undertaken during bat surveys. Readings above prescribed 'dark' levels at roosts will be addressed (in dark corridors a level of 1 lux is proposed). The success criteria for light monitoring will be that light levels are controlled within 'Dark' limits.

Monitoring of bat boxes and bat barn

During the 12-year construction phase, annual monitoring will be undertaken of the bat boxes and bat barn to confirm presence/absence and the species assemblage present.

These surveys will be undertaken annually in September and will be conducted by an appropriately licensed bat ecologist. Monitoring will consist of a check of the feature for evidence of use, such as droppings, smoothing, feeding remains, smell, staining and bat fly pupae.

Locations will include:

- existing locations where bats are already known to be present (e.g. bat box in Kenton Hills where >40 Natterer's have been historically present);
- Monitoring of bat boxes erected for barbastelle already (45 boxes distributed around the site);
- Any newly installed bat boxes to mitigate for further identified roost loss in trees.

Success criteria will include the uptake of occupation by bats and whether the number of bats present increases or remains consistent throughout the construction phase.

In the event of the bat boxes not being occupied within three years of installation, consideration will be given to moving them to alternative sites nearby, to be determined by a licensed bat ecologist.

In the event of the bat barn not being occupied within three years of installation, consideration will be given to modifications which might be acceptable within the context of the DCO, with the modifications to be determined by a licensed bat ecologist and in agreement with Natural England.

Radio-tracking for barbastelle

Bat trapping and radio-tracking will be used as a monitoring approach – the scope of this is undergoing discussion.

- The type of monitoring which will be undertaken – include survey methods and equipment to be used. If it is expected any bats are to be taken or disturbed during this period please state anticipated numbers per species against each licensable activity.

Monitoring during the operational phase will be undertaken in line with the TEMP.

Monitoring during the construction phase will use the same methods and equipment (where possible) to that used when collecting baseline information:

- Tree roost surveys – from ground-level using binoculars and torches, and aerial inspections (where possible) by qualified tree climbers.
- Bat static detector surveys – locations to remain the same as during the baseline surveys.
- Radio-tracking surveys – to use the same methodology and equipment as in previous baseline surveys.

In combination, these methods will determine any change to the ecological baseline and confirm whether favourable conservation status (FCS) has been maintained.

Currently the FSC of a species is measured and assessed with consideration given to the species' range, population size, and the condition and extent of relevant habitats, all of which inform likely future status of the populations concerned (see JNCC Joint Statement, 2018).

Monitoring Objectives

To assess whether the mitigation measures have been successful in maintaining FCS of the species concerned, the following questions will need to be answered:

1. For assessment of the impact on the local occurrence/distribution of the species concerned, has the **number/assemblage** of bat species occurring within the site changed or been reduced, despite the implementation of mitigation?
2. For assessment of the impact on the local occurrence/distribution of the species concerned, has the **breeding status** of the relevant bat species occurring on the site changed or been reduced?
3. For qualitative assessment of the impact on the population and distribution of the species concerned, has the **population type** (i.e. presence of maternity roosts) of key target species** changed or been reduced, despite implementation of mitigation?
4. Has the area of **compensatory habitat** developed sufficiently to provide for the species concerned in the long term?
5. To what extent have the **roost mitigation features** been used by the species concerned?

Therefore, the monitoring methods utilised must provide the data necessary to answer these questions.

**the target species at Sizewell C will be barbastelle bat *Barbastella barbastellus* and Natterer's bat *Myotis nattereri*. Target bat species are those which roosted consistently at the site from which a satisfactory baseline population assessment could be undertaken.

Following the monitoring surveys each year, a report will be provided assessing the data collected against the baseline. If significant issues are identified (e.g. impacts that potentially affect FCS, or inability of the survey method to provide sufficient information) then this review allows the monitoring strategy to be reassessed.

The monitoring methods, their objective, timings and success indicators are set out in the monitoring matrix below.

FCS value	Objective	Method	Timing	Location	Broad success indicators
Distribution	Monitoring of mitigation feature uptake by bats	Inspections of the bat boxes and bat house in September throughout the 12-year construction phase. Dropping collection for eDNA analysis to confirm species where possible	Once annually (September) throughout the 12-year construction period)	Woodland areas where bat boxes placed. Location of bat house.	Confirmation of use of mitigation roost features.
	Comparison of species assemblage and breeding status pre- and post-clearance works Where species baseline data is sufficient, compare roosting presence within same woodland parcels.	Automated bat static detector survey. Trapping and tracking surveys in June, August, and September	Years 2 and 4 following vegetation clearance. Review following year 4.	Retained woodland areas and / or connected woodland areas where bat boxes placed	Continued presence of the relevant bat species, associated breeding status, and roost types. Comparing pre-clearance works tracking data: assemblage, breeding status, roost types, locations and numbers present.
Habitat	Comparison of new habitat creation in relation to habitat areas lost	Assessment of woodland areas	As per TEMMP	Mitigation areas only - new woodland creation / planting areas	Woodland creation in place and meeting creation targets

- Specify which compensation/mitigation measures will be subject to monitoring (as referenced on Figure E4).

The bat house will be subject to inspection during the maternity season (May – July) for the time years stated above. Hibernation roosts within the structure will be subject to inspection during the winter hibernation season (December – February).

If the structure becomes damaged, repair work must be undertaken in a sensitive manner to minimise disturbance to any bats using the structure. A mitigation licence may be required to carry out these works.

The bat boxes installed on the suitable retained trees will be subject to annual inspection in September for the duration of the construction phase. If the bat boxes are damaged or missing, they will be replaced. In the unlikely events that the mitigation is shown to be ineffective (i.e. no evidence of bats using the bat boxes) then the bat box location may be amended.

Please note that it will be a requirement of the licence to undertake remedial action should monitoring identify that further management/maintenance is required of any compensation/mitigation provided, to ensure that mitigation/compensation measures are working effectively and are fit for purpose.

Important advice: Please always consider whether any *post development* monitoring effort should be staggered over alternate years in cases where use of the compensation measures may not occur in the same year of provision.

E4.3 Mechanism for ensuring safeguard of mitigation/compensation and post-development management, maintenance and monitoring works:

Please explain what mechanism is in place to ensure safeguard of mitigation/compensation provisions (e.g. Restrictive Covenant, clause to relinquish future development rights in S106 agreement, NERC Act agreement, explicit recognition of site in local planning documents, designation as County Wildlife Site or similar.) The need for this, and the type of mechanism, will vary with the scheme and impact. For substantial impact schemes (e.g. destruction of a significant maternity roost, or important hibernation site), some mechanism is always required. If you offer no specific mechanism, explain how you believe the population will be free of threats as far as can be reasonably determined (**the expectation of the granting of a licence should not be used for this purpose**).

The mitigation measures are within the red line boundary and will be managed by EDF and secured as relevant by requirement (e.g. MDS habitats secured by the oLEMP).

Across the wider EDF Energy estate, outwith the RLB, the existing habitats are being enhanced and managed in accordance with the Estate Wide Management Plan.

Explain how all post-development works (management, maintenance (including remedial action) and monitoring, as appropriate) will be ensured? Include a commitment that the monitoring, habitat management and maintenance work will be undertaken. Mechanism/s for ensuring delivery must be in place before applying for a licence (also see Section F).

All habitats within the red line boundary will be monitored and maintained by EDF (or their sub-contractors) for the duration of the operation the construction of the Scheme.

Across the wider EDF Energy estate, outwith the RLB, the existing habitats are being enhanced and managed in accordance with the Estate Wide Management Plan.

E5 Timetable of works: Please complete the **work schedule document WML-A13-a-E5a&b found on the 'bat' application form web page and append to your application pack.**

Important Advice: Please note that from end of March 2014 a separate work schedule is a mandatory requirement to support a new bat licence application when using this template.

F Declarations

If the mitigation/compensation area/s is/are not owned by the applicant, you must have consent from the relevant land owner(s). You must have also secured details of how any measures to maintain the population in the long term will be achieved (e.g. a legal agreement).

F1 Declaration Statement(s) – You must include the following declarations within your Method Statement and include the appropriate answer (Yes/No/Not applicable):

F1.1 Re: section E1 - I confirm that relevant landowner consent/s has/have been granted to accept bats into roosts or access into roosts on land outside the applicant's ownership:

No

F2.2 Re: section E2 - I confirm that landownership consent/s has/have been granted to allow the creation of the proposed compensation on land outside the applicant's ownership

Yes

F2.3 Re: section E3 - I confirm that consent/s has/have been granted by the relevant landowner/s for monitoring, management and maintenance purposes on land outside the applicant's ownership

Yes

Comments if applicable:

Important Advice:

Unsecured consents statement:

If you have been unable to secure consents for any of the three declarations please explain why and detail any plans you have in place to obtain the consent(s) or provide details of any right(s) or agreement(s) that will enable the lawful implementation of the proposed mitigation, compensation and monitoring. Failure to provide the appropriate landowner consents means that the Method Statement is unlikely to meet the requirements for the FCS test to be met. It is therefore in your interest to ensure that the appropriate consents have been secured *before* applying for a licence.

G References: List any references cited, and include credits for source information.

H Annexes (supporting documents please append to your application pack)

H1 Pre-existing survey reports;

H2 Raw survey data.

I Check list of figures to be submitted with each Bat Method Statement

With your Method Statement and supporting documents please submit the following maps/figures – see table below. Note that some can be included within the Method Statement itself (if preferred) and others must be submitted *individually* (i.e. separate documents). Maps/Figures must include the title, site name as referenced on your application form, date and figure reference. If a grid reference is more applicable (e.g. a bat house is being provided please included this). Include a scale bar (appropriate to the situation e.g. 100m on site maps, 1km on location maps) and direction of North etc.

Additional maps, photographs or diagrams should be included where necessary to adequately explain the scheme.

Figure reference	Mandatory as will be included in the annexed licence, if applicable	Mandatory for assessment purpose only, but will not be included in the annexed licence	What it must show (also see details above on site reference, dating and naming).
Figure B2.1	-	Yes, if the application is part of a phased or multi-plot development	Master plan overview- note – this is not the same as a master plan document, for which you should follow the guidance as stated in section B2.1.
Figure B2.2	-	Yes, if applicable	Locations of other nearby bat licensed sites, or sites which will be impacted on by future development.
Figure C5a	-	Yes	Location map at an appropriate scale for the application (often 1:50,000 or 1:25,000)
Figure C5b	-	Yes	Survey area showing all buildings, structures and habitats that are within the survey area and distinguishing those that were surveyed and those that were not. Indicate where surveyors were located for each of the surveys and their respective field of view. Aerial photographs should be provided where possible (ensure you have permission to use copy righted maps). If automated detectors and/or transect routes were used, ensure that these are indicated (as appropriate).
Figure C6	-	Yes	Survey results - provide clear, annotated and cross-referenced maps/plans/photographs to show the survey results (access points, location of roosts, flight lines, results of activity surveys where DNA samples were taken etc). Ensure the Figure is at a suitable scale to show the results. If presenting multiple survey results on a single Figure, ensure the results are clearly differentiated.
Figure D	Yes	-	Impacts plan – map/figure which must show all structures or habitats (clearly referenced) that will be

			disturbed, damaged or destroyed, detailing where the roosts and access points are.
Figure E2	Yes – but only if applicable to the application	-	Non-standard capture and exclusion apparatus. If these are proposed please include diagrams/photographs.
Figure E3	Yes	-	Specifications for mitigation / compensation (including all dimensions for bat lofts/houses/stand-alone structures and materials to be used etc and 8-figure grid reference). Mitigation / compensation (must show all habitat creation, restoration, boxes). It may be necessary to submit more than 1 figure if the proposal is large or complicated.
Figure E4	Yes – when monitoring and maintenance will be included in the licence	-	Monitoring, management and maintenance map. Please indicate the specific structures and habitat that are to be managed, maintained and monitored as part of this licence proposal. Ensure that they are correctly referenced and are consistent with other parts of the Method Statement and figures.

Definitions of roost types to be included in the application (further detail can also be found in the Bat Mitigation Guidelines and the BCT's "Bat Surveys Good Practice Guidelines"):

- a. **Day roost:** a place where individual bats, or small groups of males, rest or shelter in the day but are rarely found by night in the summer.
- b. **Night roost:** a place where bats rest or shelter in the night but are rarely found in the day. May be used by a single individual on occasion or it could be used regularly by the whole colony.
- c. **Feeding roost:** a place where individual bats or a few individuals rest or feed during the night but are rarely present by day.
- d. **Transitional / occasional roost:** used by a few individuals or occasionally small groups for generally short periods of time on waking from hibernation or in the period prior to hibernation.
- e. **Swarming site:** where large numbers of males and females gather during late summer to autumn. Appear to be important mating sites
- f. **Mating sites:** sites where mating takes place from later summer and can continue through winter.
- g. **Maternity roost:** where female bats give birth and raise their young to independence.
- h. **Hibernation roost:** where bats may be found individually or together during winter. They have a constant cool temperature and high humidity. Sites where hibernating bats have been confirmed by appropriate survey effort should be classed as '**hibernation confirmed**'.
- i. **Satellite roost:** an alternative roost found in close proximity to the main nursery colony used by a few individual breeding females to small groups of breeding females throughout the breeding season.
- j. **Other** – please explain what the roost type is if not one of the above (we recognise that roost types are interchangeable and not always easy to classify according to the nuances of certain species).
- k. An '**alternative roost**' shall include: a purposely installed bat box; an existing roost which will not be impacted by the works; or other new/enhanced roosting opportunities. Any alternative roost must be suitable for the species, within or close to the existing roost and free from additional disturbance or development pressure.