

The Sizewell C Project

SZC Co.'s Response to the Secretary of State's Request for Further Information dated 31 March 2022: Appendix 4 - Code of Construction Practice (clean version), submitted in response to Question 8.16 and in response to our submission dated 8 April 2022 - Appendices Part 2 of 3

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SIZEWELL C PROJECT – CODE OF CONSTRUCTION PRACTICE APPENDICES

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APPENDIX D MAIN DEVELOPMENT SITE – BAT NON-LICENSABLE METHOD STATEMENT (ENVIRONMENTAL STATEMENT VOLUME 2 CHAPTER 14 APPENDIX 14C1B)



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Executive Summary

This document is compiled in relation to the proposed development of Sizewell C Main Development Site (main development site). It is provided alongside an Environmental Statement (ES). The purpose of this document is to outline how bats will be safeguarded within the site preparation and construction phases of the development, in order that no offences are triggered under applicable wildlife legislation.

SZC Co. is proposing to build and operate a new nuclear power station on the Suffolk coast, known as Sizewell C Power Station (hereafter referred to as 'Sizewell C') located to the north of the existing Sizewell B Power Station.

It is located to the north of the existing Sizewell B power station, the Sizewell C site is located on the Suffolk coast, approximately halfway between Felixstowe and Lowestoft; to the north-east of the town of Leiston. The project is being submitted as a component Nationally Significant Infrastructure Project (NSIP) and will be approved through the Development Control Order Process (DCO).

This Bat Non Licensable Method Statement compiled by Arcadis Consulting (UK) Limited (hereafter referred to as 'Arcadis') outlines the key approaches to avoiding impacts to bat populations present within or adjacent to the construction site for Sizewell C main development site (main development site). It must be used by SZC Co. in relation to the proposal to build the Sizewell C.

Level 1 control documents will either be certified under the Development Consent Order (DCO) at grant or annexed to the Deed of Obligation (DoO). All are secured and legally enforceable. Some Level 1 documents are compliance documents and must be complied with when certain activities are carried out. Other Level 1 documents are strategies or draft plans which set the boundaries for a subsequent Level 2 document which is required to be approved by a body or governance group. The obligations in the DCO and DoO set out the status of each Level 1 document.

This bats non-licensable method statement (hereafter referred to as the 'reasonable avoidance measures method statements') is a Level 1 document secured as part of the Code of Construction Practice by Requirement 2 of the draft DCO. This document may be updated prior to construction and any updated approach must be agreed with the Ecology Working Group (EWG). The EWG has a variety of roles in this strategy in approving future variations to the approach and these are set out where relevant below.

The Deed of Obligation establishes the governance groups and sets out how these governance groups will run and, where appropriate, how decisions (including approvals) should be made.

Where separate Level 1 or Level 2 control documents include measures that are relevant to the measures within this document, those measures have not been duplicated in this document, but cross-references have been included for context.



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Where separate legislation, consents, permits and licences are described in this document they are set out in the **Schedule of Other Consents**, **Licences and Agreements** (Doc Ref. 5.11(C)).

For the purposes of this document the term 'SZC Co.' refers to NNB Nuclear Generation (SZC) Limited (or any other undertaker as defined by the dDCO), its appointed representatives and the appointed construction contractors.

The information within this report is underpinned by a suite of surveys conducted across the site since 2007. These surveys have included but are not limited to desk studies, radio tracking of bats, tree inspections, automated detector surveys, emergence and reentry surveys, tree inspections. The full details of the surveys conducted and the results of the surveys which were utilised to inform this method statement are provided in the associated ES, Appendix 14A8 and the associated annexes. However, the key information is provided here where required for clarity.

Measures outlined within this report which will be implemented to safeguard bats during the site preparation and construction phases of the project are outlined within this document. These include:

- Pre-clearance checks and surveys of vegetation;
- Micro-siting of construction phase features to minimise impacts;
- Prescriptive lighting approaches to minimise impacts on roosts and foraging and commuting bats; and
- Measures to control impacts from noise on retained roosts and foraging and commuting bats.
- Monitoring of bats and noise levels throughout the construction period.

This document also summarises measures proposed for compensation and enhancement. This is a summary of the approach, with further information presented in the bat mitigation strategy (Ref. 1.1).

Throughout the construction period, the success of the avoidance methodology provided in this document will be assessed and should it be necessary, the approach will be re-evaluated and the mitigation modified to control impacts, or an EPS licence obtained if required.



1 Bat Method Statement

1.1 Introduction

- a) Background and scheme overview
- 1.1.1 SZC Co. is proposing to build and operate a new nuclear power station on the Suffolk coast, known as Sizewell C Power Station (hereafter referred to as 'Sizewell C') located to the north of the existing Sizewell B Power Station.
- 1.1.2 It is located to the north of the existing Sizewell B power station, the Sizewell C site is located on the Suffolk coast, approximately halfway between Felixstowe and Lowestoft; to the north-east of the town of Leiston. The project is being submitted as a component Nationally Significant Infrastructure Project (NSIP) and will be approved through the Development Control Order Process (DCO).
- 1.1.3 Sizewell C would comprise two United Kingdom European Pressurised Reactor (UK EPR™) units with an expected net electrical output of approximately 1,670 megawatts (MW) per unit, giving a total site capacity of approximately 3,340MW. The new nuclear power station would represent the Nationally Significant Infrastructure Project (NSIP) component of the proposed development
- 1.1.4 In addition to the key operational elements of the UK EPR™ units, the Sizewell C Project comprises other permanent and temporary development to support the construction and operation of the Sizewell C nuclear power station. The key elements are the main development site, comprising the Sizewell C nuclear power station itself, offshore works, land used temporarily to support construction including an accommodation campus, and a series of off-site associated development sites in the local area. These include:
 - Two temporary park and ride sites; one to the north-west of Sizewell C at Darsham (the 'northern park and ride'), and one to the south-west at Wickham Market (the 'southern park and ride') to reduce the amount of traffic generated by the construction workforce on local roads and through local villages;
 - A permanent road to bypass Stratford St Andrew and Farnham (referred to as the 'two village bypass') to alleviate traffic on the A12 through the villages;
 - A permanent road linking the A12 to the Sizewell C main development site (referred to as 'Sizewell link road') to alleviate traffic from the B1122 through Theberton and Middleton Moor;



- Permanent highway improvements at the junction of the A12 and B1122 east of Yoxford (referred to as the 'Yoxford roundabout') and other road junctions to accommodate Sizewell C construction traffic;
- A temporary freight management facility at Seven Hills on land to the south-east of the A12/A14 junction to manage the flow of freight to the main development site;
- A temporary extension of the existing Saxmundham to Leiston branch line into the main development site ('the green rail route') and other permanent rail improvements on the Saxmundham to Leiston branch line, to transport freight by rail in order to remove large numbers of HGVs from the regional and local road network; and
- Green rail route extension and rail improvements to the Saxmundham to Leiston branch line.
- 1.1.5 The components of the Project listed above are referred to collectively as the 'Sizewell C Project'. This method statement is compiled in relation to the works on the Main Development Site (main development site) only. Where required, mitigation and avoidance measures proposed in relation to the other aspects of the project are provided in support of the ES Chapters related to those components of the project.
- 1.1.6 In order to enable the proposed development of the main development site, as detailed above, a number of facilitating works (including tree felling, vegetation clearance works, ground-breaking works and lighting measures) are required. Given the opportunities afforded to bat species by the habitats present within the site, the proposed facilitating works have the potential to cause disturbance and / or injury / mortality of bats that may be present. Accordingly, the purpose of this document is to provide a reasonable avoidance measures (RAMs) method statement that can be used by the ecological consultant, SZC Co. and any relevant subcontractors, to ensure the safeguarding of bats during the facilitation works to be undertaken within the site.

b) Site location and setting

1.1.7 The main development site is located in Sizewell, East Suffolk. The site is illustrated in Plate 1.1 and is largely 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. The larger area present to the north east includes Hilltop Covert, Dunwich Forest, Goose Hill 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 small wetland area, 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.
- 1.1.8 The area covered by this MS is presented in Plate 1.1 below.



Plate 1.1: Site location – Main Development (terrestrial area)

c) Purpose of this document

1.1.9 This method statement outlines how bats are going to be safeguarded within the development. This includes the site preparation (i.e. vegetation removal



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and site stripping) and construction phase (including non-licensed mitigation for noise and lighting impacts).

- 1.1.10 Details of measures to be implemented to safeguard bats during the operational phase of the development are presented within the mitigation strategy.
 - d) Key ecological constraints
- 1.1.11 The key potential ecological constraints associated with the facilitation works within the main development site (in addition to bats) are related to the presence of:
 - Great crested newt (GCN);
 - Natterjack Toad:
 - Dartford Pink:
 - Reptiles;
 - Water vole:
 - Nesting birds; and
 - Otter.
- 1.1.12 Where appropriate, draft license applications have also been submitted to Natural England.
- 1.1.13 Within this site, at least ten species of bat have been recorded within the site boundary: barbastelle (*Barbastella barbastellus*); serotine (*Eptesicus serotinus*); Daubenton's bat (*Myotis daubentoni*); Natterer's bat (*Myotis nattereri*); Leisler's bat (*Nyctalus leisleri*); noctule (*Nyctalus noctula*); Nathusius' pipistrelle (*Pipistrellus nathusii*); common pipistrelle (*Pipistrellus pipistrellus*); soprano pipistrelle (*Pipistrellus pygmaeus*); and brown longeared bat (*Plecotus auritus*).
- 1.1.14 This method statement only covers measures related to safeguarding bat species present on the main development site, there are associated draft method statements and draft protected species licences for other receptors and other aspects of the Sizewell C development provided separately.



- 1.2 Status of Bats within the site
 - a) Introduction
- 1.2.1 This section of this non-licensed method statement presents a high-level summary of the baseline data that underpins the thinking behind this document. Full details of the surveys conducted are presented in the ES Appendix 14A8.
- 1.2.2 A suite of surveys have been undertaken to inform the ES, and include:
 - Assessment of desk study data obtained between 2007 and 2019;
 - Bat tree and building assessments (internal and external inspections including hibernation assessments);
 - Radio tracking surveys;
 - Tree inspections for bats;
 - Emergence / re-entry surveys on buildings;
 - Automated detector surveys; and
 - Walked and driven activity transects.
- 1.2.3 In summary, the main development site supports ten species of bat within the site boundary. A number of roosts, present in structures and trees, have been identified within the wider survey area including maternity roosts, hibernation roosts and non-breeding roosts; these are outlined below. None of these bat roosting locations will be lost during the development. See 1 for location of these roosts.
 - i. Roosts
- 1.2.4 This section of the report outlines the roosts found within and around the site which were considered when outlining the avoidance methods to be specified as a component of the project. These roosts are subdivided into a) building and b) tree roosts for clarity. All of these roosts are presented on Figure 14C1B.1.

Building roosts

- 1.2.5 This section of the report lists the roosts found within buildings during the surveys of the site.
- 1.2.6 The following roosts are located in Upper Abbey Farm:



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- Building 1: barbastelle hibernation roost; Natterer's bat mating roost; common and soprano pipistrelle day roosts;
- Building 5: Pipistrellus sp. day roost;
- Building 9: brown long-eared bat day roost;
- Building 10: brown long-eared maternity roost; and
- Building 11: Natterer's bat, Daubenton's bat & brown long-eared hibernation roosts; common and soprano pipistrelle day roosts.
- 1.2.7 The following roost is located within Ash Wood Cottages (located outside of RLB but within the ZoI of the development). The location of this structure is presented in
 - Brown long-eared maternity roost
- 1.2.8 The following roosts are located in Lower Abbey Farm (located outside of RLB):
 - Building 1: common pipistrelle day roost;
 - Building 2: unidentified bat species day/ transitional roost;
 - Building 6: unidentified bat species day/ transitional roost;
 - Building 8: common pipistrelle day roost; and
 - Building 11: brown long-eared roost.
 - Leiston Abbey (located outside of RLB):
- 1.2.9 The following roost is located within the Abbey Building bat box: Natterer's maternity roost
- 1.2.10 The following roost is located within the World War II Bunker (located outside of RLB) Brown long-eared hibernation roost.
 - ii. Tree roosts
- 1.2.11 This section of the report lists the roosts found within trees during the surveys of the site.
- 1.2.12 Barbastelle tree roosts (including maternity and non-breeding) were identified within the following woodland areas (see Figure 1 for roost locations):
 - Northern edge of Kenton Hills (within RLB) R1, R20, R2, R11;



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- Ash Wood (outside of RLB) R3, R9, R13, R14 & R26;
- Kenton Hills/ Nursery Covert woodland complex (outside of RLB) R15, R16, R18 & R27;
- Grimseys (outside of RLB) R4, R35 & R36;
- Leiston Abbey Woodland (outside of RLB) R21;
- Greenhouse Plantation (outside of RLB) R6;
- Plantation Cottages Woodland (outside of RLB) R17, R19 & R32; and
- The Grove (outside of RLB) R5, R7, R8 and R23.
- 1.2.13 Natterer's tree roosts (including maternity and non-breeding) were identified within the following woodland area:
 - Kenton Hills/ Nursery Covert woodland complex (outside of RLB) RD;
 - Sandypytle Plantation (outside of RLB) RE; and
 - The Grove (outside of RLB) RF.
- 1.2.14 One brown long-eared tree roost was identified within the woodland area at Rookyard Wood (outside of RLB);
- 1.2.15 One noctule roost was identified within a bat box at Kenton Hills/ Nursery Covert woodland complex (outside of RLB) – towards northern extent of the woodland complex.
- 1.2.16 Several common and soprano (maternity and non-breeding) roosts were identified within bat boxes at Kenton Hills/ Nursery Covert woodland complex (outside of RLB)
- 1.2.17 A small number of pipistrelle roosts have been identified in trees to be removed within the main development site.
 - iii. Key commuting and foraging areas
- 1.2.18 Significant landscape changes will take place to facilitate the Scheme. The site also supports habitats (hedgerows, tree lines and woodland blocks) which are used by foraging and commuting bats. Important commuting routes/ and foraging areas have been identified in the following areas:
 - Upper Abbey Bridleway and Fiscal Policy Junction north to south commuting route;



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- Black Walks north to south commuting route between Ash Wood & Minsmere;
- Kenton Hills east to west commuting route and foraging area;
- Goose Hill eastern boundary used for commuting route and foraging;
- Stonewell Belt north to south commuting route;
- SSSI Crossing north to south commuting route and foraging area;
- The Grove north to south from Goose Hill;
- Leiston Old Abbey woodland foraging area; and
- Ash Wood foraging area.

b) Legislation

- 1.2.19 All bat species in England are listed on Schedule 5 of the WCA 1981 (as amended) (HMSO, 1981) in respect of Section 9, which makes it an offence, inter alia. to:
 - Intentionally or recklessly kill, injure or take a bat;
 - intentionally or recklessly damage, destroy or obstruct access to any structure or place that a bat uses for shelter or protection; or
 - Intentionally or recklessly disturb a bat while it is occupying a structure or place that it uses for shelter or protection.
- 1.2.20 The offence "recklessly" was added by the Countryside and Rights of Way Act 2000 (CRoW) (HMSO 2000).
- 1.2.21 All bat species in England receive further protection under Regulation 41 of The Conservation of Habitats and Species Regulations 2017. They are listed on Schedule 2 of the Regulations, which makes it an offence, *inter alia*, to:
 - Deliberately capture, injure or kill a bat;
 - Deliberately disturb a bat, in particular any disturbance which is likely:
 - Impair their ability
 - to survive, to breed or reproduce, or to rear or nurture their young, or
 - to hibernate or migrate



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- Affect significantly the local distribution or abundance of that bat species; or
- Damage or destroy a breeding site or resting place of a bat.
- 1.2.22 Noctule (Nyctalus noctule), soprano pipistrelle (Pipistrellus pygmaeus) and brown long-eared bat (Plecotus auratus) are also included on Section 41 of the NERC Act 2006 (HMSO, 2006). This Act places a duty upon public bodies to have regard to the purpose of conserving biodiversity within all of their actions. The species listed under Section 41 are 'Species of Principal Importance for the conservation of biodiversity in England' for which conservation steps should be taken or promoted.
- 1.3 Reasonable avoidance measures method statement for bats
 - a) Introduction
- 1.3.1 This section provides a suite of dedicated reasonable avoidance measures method statements required to safeguard bats during the site set up and construction works.
- 1.3.2 In all cases the aim of these reasonable avoidance measures method statements is to reduce the risk of causing disturbance / injury / mortality of a protected species and avoid contravention of the relevant applicable legislation. An Ecological Clerk of Works (ECoW) is responsible for determining exactly when and where it is appropriate to apply the measures described in the reasonable avoidance measures method statements. The ECoW must oversee and quality-control the implementation of the tasks undertaken.
- 1.3.3 It is the responsibility of SZC Co. to ensure site contractors to carry out the works in a manner which do not contravene the legislation with regards to protected species in the areas identified as having potential to support protected species. Any variations from the individual reasonable avoidance measures method statements may contravene legislation and therefore risk prosecution. Thus, it is their responsibility to ensure that no changes to the timings or methods outlined below are made without prior agreement from the ECoW.
 - b) Provision of a toolbox talk for bats
- 1.3.4 Prior to commencement of any works with the potential to impact bats, all site contractors must be briefed by the ECoW, as part of the site induction, to provide them with a basic overview of the life history, habitat requirements, identification and legal protection granted to bats.



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- 1.3.5 Site-specific toolbox talks, to be identified by the ECoW, must also be undertaken as necessary to identify the habitats present within the site that have the potential to be used by bats and outline the environmental measures to be followed in order to avoid breaches of legislation and / or adverse effects on bats that could occur within or in the vicinity of the working area.
 - c) Micro-siting of works
- 1.3.6 A component of the ECoW's responsibilities is to assist with micro-siting of works. This must include siting of features to minimise the need for removal of vegetation, particularly vegetation which may support roosting bats.
 - d) Precautionary working methods
- 1.3.7 This section of this reasonable avoidance measures method statement provides the precautionary working methods required to safeguard bats prior to works being undertaken.
 - i. Tree felling
- 1.3.8 In line with the mitigation hierarchy, the proposed scheme layout retains areas of valuable woodland in order to avoid impacting the majority of identified tree roosts listed in Section 3.1.1. These areas include the northern edge of Kenton Hills woodland complex and Ash Wood.
- 1.3.9 A small number of pipistrelle roosts have been identified within the SZC site within trees to be removed (summer transitional roosts).
- 1.3.10 In addition, a number of trees identified to be felled in 2021 have been assessed as having low, **moderate or high** potential of supporting roosting bats. These following approach to safeguarding bats which may utilise the trees for roosting will be undertaken.
- 1.3.11 The approaches to the known roosts and the required mitigation are presented in the draft Natural England organisational licence method statement (Doc Ref. 9.92) applicable to the development and are not repeated here.
- 1.3.12 Initially all trees to be removed must be reassessed for bat roosting potential prior to felling.
- 1.3.13 Any trees identified as having low bat roosting potential must be removed using a soft felling methodology with a suitability experienced, appropriately licensed, bat worker or bat worker assistant present. Where possible, trees will be removed in October, thereby avoiding the sensitive maternity (April-September) and hibernation (November-February) periods for bats.



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- 1.3.14 For any trees with moderate or high roosting potential, a pre works check for roosting bats must be undertaken. The methodology and required survey effort for these pre works checks is dependent upon the status of the roosting features within the trees, but may include:
 - A climbed or ground based tree inspection using an endoscope and / or torch;
 - Emergence / re-entry surveys.
- 1.3.15 Should any of the trees to be removed be found to support bat roosts, the prescriptions of the Natural England Organisational Licence must be followed. The documents associated with this licence will outline the required mitigation, and the required measures are not discussed further within this report.
- 1.3.16 If no roosts are found, the approach outlined below must be followed.
- 1.3.17 For all tree with low, moderate or high bat roosting potential, Potential Roost Features (i.e. those with the potential to be used by roosting bats: PRFs) within trees must be thoroughly inspected using an endoscope immediately prior to felling.
- 1.3.18 All trees with PRFs must be soft felled using the following precautionary measures:
 - Trees classed as having potential to support roosting bats, must be felled under the watching brief of the ECoW;
 - Where PRFs cannot be exhaustively checked they must be section felled, with each section carefully lowered to the ground. Cuts must be made at least 50 cm beyond the extent of the potential roost feature;
 - Where possible, sections with these features must be lowered carefully to the ground;
 - If limbs or large branches require felling, consideration must 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 to ensure bats are not present, the crack must be wedged open prior to prevent their closure when pressure is released during the removal of the limb/branch;
 - The stems of dense ivy must be cut at ground level at least 48 hours before the tree is felled; and



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- Once the trees have been felled the potential roost features must be checked on the ground by a suitably experienced bat ecologist. If any potential roost feature can still not be exhaustively checked that section must be allowed a rest period of at least 24 - 48 hours, with the openings clear, to ensure that any individual bats that may have been missed are given the opportunity to relocate.
- 1.3.19 If any bats are encountered during the felling operations all works and activity must cease immediately, until the ECoW has advised on the most appropriate manner to deal with the situation. In this event, it is likely that a European Protected Species Licence will need to be granted prior to the felling activities can continue.
 - ii. Measures to control the impact of lighting on site
- 1.3.20 This section of this reasonable avoidance measures method statement outlines how impacts from lighting during the construction phase of the development will be controlled.
- 1.3.21 Lighting from construction activities are likely to increase light levels and could cause light intrusion into adjacent habitats. Lighting directly affects bats in their activity at night and can also affect the insects they feed on.
- 1.3.22 Impacts from lighting can include:
 - Disturbance to roosting bats in roosts in adjacent habitats/ structures causing delayed emergence or roost abandonment; and
 - Displacing foraging and commuting bats from lit areas.
- 1.3.23 In order to reduce the impact on bats using the site, a sensitive lighting strategy must be followed during the construction and operation of the site. The Lighting Management Plan for Construction and Operational Sites (Ref. 1.3) must be referred to when undertaking works, especially at night. Areas where lighting is most likely to negatively impact upon bats are presented in Figures 9 and 10.
- 1.3.24 The design of the development has been established to minimise the potential impacts upon bats from lighting. The development design ensures that works which will be highly lit are located in areas which are of a lower importance to bats and away from the more sensitive locations. Light screening is also proposed, as presented in Figure 14C1B.4.
- 1.3.25 Dark corridors have been defined and the light levels in these locations must be maintained at below 0.1 lux. The dark corridors plan is secured through the Lighting Management Plan (Doc Ref. 10.17).



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1.3.26 The following guidelines and best practice outlined in the 'Bats and Artificial Lighting' Guidance Note (Ref. 1.4) must also be considered during and after construction.

General lighting for bats

- Artificial light must be avoided, where possible, and should only be installed where and when it is necessary e.g. safety reasons to complete a task. If lighting is not required, artificial light must not be used.
- If lighting is unavoidable: The light must be as low as guidelines permit and the following mitigation measures should be adopted.
- Use LED light sources; light emitted has a narrow beam, which is more directional and easier to controlled. LEDs typically have no UV component, which attracts fewer invertebrates;
- Use a warm colour temperature (~2700 3000K);
- Use a tuneable LED Luminaire;
- Luminaries must be mounted horizontally, where possible, i.e. no upwards tilt;
- Hoods, baffles or louvres must, where possible, be fitted to minimise light spill and direct light to where it is needed;
- The shortest lighting columns must be used, to avoid light spill, for the task that the lighting is required; and
- The period during which lights are turned on at night must be minimised wherever possible:

Lighting around known bat roosts:

- Buildings at Upper Abbey Farm and Ash Wood Cottages support bat roosts:
- A number of trees roosts have been identified within areas of woodland across the site;
- No bat roost (buildings, vegetation and access points) should be directly illuminated and lighting should be directed away from these buildings and/or vegetation;



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- 1.3.27 Throughout the construction process, it is proposed that there is to be, monitoring of known bat roosts and key commuting and foraging areas, as defined within the **TEMMP** (Doc Ref.10.28).
 - iii. Measures to control the impact of noise on bats
- 1.3.28 This section of this reasonable avoidance measures method statement outlines how impacts from noise during the construction phase of the development will be controlled.
- 1.3.29 The construction of the proposed development will result in an increase in noise within the site boundary and adjacent areas. Noise disturbance may arise through construction activities (such as noise from machinery), increased vehicle movements and increased human presence of site during construction (as highlighted in Figures 9 and 10). The level (intensity), timing and duration of high frequency noise will be variable, depending on the nature of the construction activity. It is expected that noise levels will decrease over the course of the overall construction programme, with Phase 1 having the highest predicted noise levels. The locations of the impacts of noise during Phase 1 and Phase 2 of the development are shown in Figures 2 and 3.
- 1.3.30 As a result, safeguarding measures are recommended that would avoidance disturbance to bats, mitigate for any unavoidable disturbance to bats and monitoring the status of bats within the site and adjacent areas to determine the impact of noise in the long term. Each of these categories is set out in further detail below.

iv. Avoidance

1.3.31 In line with the mitigation hierarchy, avoiding measures with respect to bats within and in close proximity to the site are to be incorporated into the development. Such measures include the creation of earth bund along the northern boundary of Kenton Hills (as shown in Figure 4), which measures 3m high and reduces the noise pollution travelling from the development working area to sensitive areas such as Kenton Hills. Similarly, 5m tall acoustic fencing will be installed between the working areas and areas which have been identified as being sensitive to noise (listed below in **Table 1.1**) which functions by screening noise from working areas.

v. Mitigation

1.3.32 Where it is not possible to avoid impacting the roosting and foraging and commuting bats within and adjacent to the site, a number of mitigation measures have been proposed, including the provision of additional areas of foraging habitat within the site (as shown in Figure 12), the creation of a dedicated bat house (as shown in Figure 4) and the provision of 45 bat boxes



NOT PROTECTIVELY MARKED

(as shown in Figure 11). Such measures have been set out in detail above and Appendix 14C1A Bat Mitigation Strategy.

vi. Bat and noise monitoring

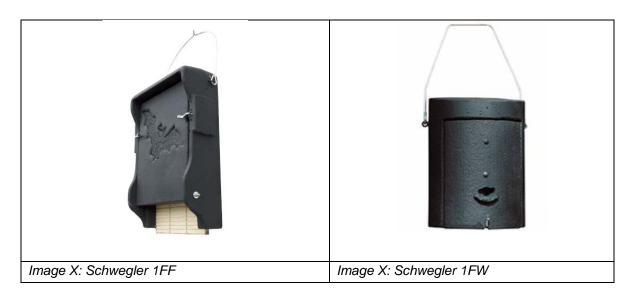
- 1.3.33 It is predicted that a number of roost locations and important commuting and foraging areas would exceed the threshold of 65dB with respect to noise disturbance to bats. However, there is insufficient data or evidence available to confirm that this will adversely impact the bats present within and in close proximity to the site, given that bats display a wide variety of tolerances and levels of habituation to noise.
- 1.3.34 A precautionary approach to monitoring both the roosts the important commuting and foraging areas and the noise levels in proximity to known roosts is proposed. Additional measures such as mobile noise screens could be employed if required. Such an approach will ensure that further information with respect to the impact of noise on bats will be clearer (as highlighted within Figures 7 and 8). It is recommended that this information be made publicly available to inform the approach to bats and noise for subsequent developments.
- 1.3.35 Monitoring of noise and the impact of noise on bats is secured through the **TEMMP** (Doc Ref. 10.28).
 - e) Mitigation roost features
- 1.3.36 This section outlines the proposed provision of alternative roosting provision.
 - i. Provision of bat boxes
- 1.3.37 Bat boxes must be provided at a ratio defined by the number off roosting features to be removed. This is secured in the licence and is as 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
 - Maternity roost of Annex 2 species would need to be covered by a separate licence."
- 1.3.38 The boxes must be installed according to the general prescriptions below:



- Bat boxes must be installed by the contractor, under the direction of the Ecologist, prior to tree felling and the commencement of works;
- The boxes must be positioned on suitable retained trees, within the red line boundary, around the site in order to provide continuity of roosting habitat throughout the site;
- Each box must be positioned approximately 3-5m high and any branches causing obstruction to a direct flight path to the boxes will be removed;
- The boxes must be hung from a tree branch near the trunk or fixed to the trunk with the supplied 'tree-friendly' aluminium nail.
- The bat boxes must be positioned on north, south-east and southwesterly aspects to account for seasonal variation in temperature.
- The boxes must be placed in areas which avoid illumination from the Scheme and will not be illuminated:
- The boxes must remain in situ for the duration of the works and after completion.
- 1.3.39 There has already been provision of additional roost resources. Overall, 45 boxes have been placed in suitable areas (the location of these bat boxes is presented in Figure 11). The rationale behind the erection of these boxes is presented in the Bat Mitigation Strategy.
- 1.3.40 Photographs bat boxes which would be suitable for erection are provided for information purposes in **Table 1.2** below.

Table 1.1: Examples of suitable bat boxes





ii. Provision of a bat barn/house

- 1.3.41 As outlined in the **Bat Mitigation Strategy** and **Sizewell C Project Bat Method Statement** (Doc Ref. 9.92(A)), a precautionary approach to mitigation for indirect impacts to building roosts is proposed. As a component of the mitigation, a bat house or enhanced structure for bats is proposed.
- 1.3.42 The bat barn/house or enhanced structure (indicative location shown in Figure 5) below will be designed to include features suitable for species found roosting at on site, including; barbastelle, Natterer's bat, Daubenton's bat. brown long-eared, common and soprano pipistrelle.
- 1.3.43 The proposed location for this structure is to be surrounded by suitably retained vegetation. This area will not be lit and will not be used for general public use. Existing vegetation is present around the proposed location of the bat house.
- 1.3.44 Features to help create a range of temperatures and conditions have been included within the building design and are described in **Table 1.3** below. The bat house will be draft free and a stable temperature environment will be created. The floors will be load bearing to allow for safe internal monitoring visits.

Table 1.2: Specifications for proposed bat structure

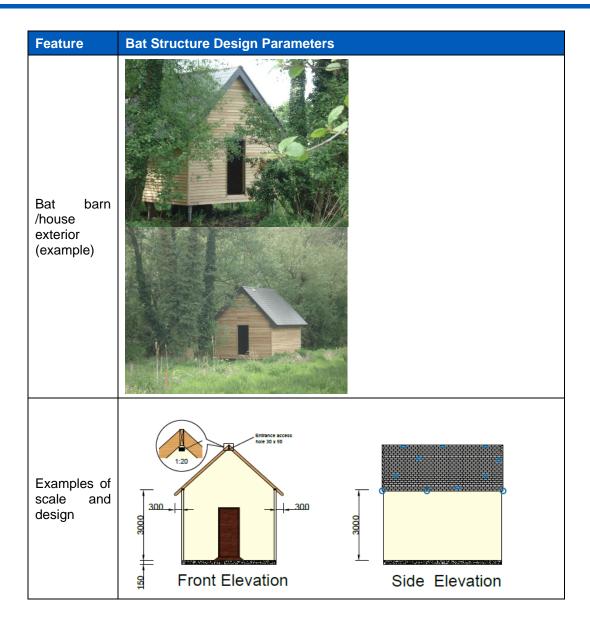
Feature	Bat Structure Design Parameters					
Roof height	>2m					
Roof design	Maximise gable-end provision. Minimum two gable ends with access, ideally 4, one at each direction.					



NOT PROTECTIVELY MARKED

Bat Structure Design Parameters				
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.				
Through trapdoor in floor to roof. Locked door to structure at ground level.				
 Free flying areas, Baffles, Hot boxes, Cooler areas, Hanging tiles, Crevices, Wooden hibernation boxes. 				
Accesses at gable ends (approx. 30 x50mm), at eaves, soffits and in the roof skin (i.e. access slates / tiles.				
To be located close to existing flight lines. No lighting directly on the roost, particularly not access points for bats. dark corridor to the building from off-site and adjacent habitats. Surrounded by vegetation insofar as is possible. Access to pond areas desirable. Potential locations shown in image 1.				
Structure of wood, with cladding / weatherboarding. Can also be masonry / block if required. Ideally one cavity wall at north aspect with 15,mm 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 Roofing Membrane (BRM). Will need to deter vandalism / unauthorised access. 'water pumping house' or similar sign can be used as a deterrent.				







References

- 1.1 Arcadis. 2020. Sizewell C Project, Terrestrial Ecology and Ornithology, Main Development Site, Appendix 14C1 Bat Mitigation Strategy. Vol 2, Chapter 14.
- 1.2 Arcadis. 2020. Sizewell C Project, Terrestrial Ecology and Ornithology, Main Development Site, Technical Appendix 14A8 Bats (in draft). Vol 2, Chapter 14.
- 1.3 EDF Energy. 2018. Lighting Strategy for Construction and Operational Sites. Sizewell C Project.
- 1.4 Institute of Lighting Professionals (2018) Bats and Artificial Lighting in the UK: Bats and the Built Environment Series. Guidance Note 08/18.
- 1.5 Arcadis. 2020. Sizewell C Project, Terrestrial Ecology and Ornithology, Main Development Site, Environmental Statement. Vol 2, Chapter 14.
- 1.6 Arcadis. 2020. Sizewell C Project, Noise and Vibration, Main Development Site, Environmental Statement. Vol 2, Chapter 11.





FIGURES

