The Sizewell C Project

9.4 Terrestrial Ecology Monitoring and Mitigation Plan - Clean Version

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1. Introduction

1.1 Overview

1.1.1 This Terrestrial Ecology Monitoring and Mitigation Plan (the 'plan') has been developed following the completion of the Environmental Impact Assessment (EIA) and the Shadow Habitat Regulation Assessment (sHRA) for the Sizewell C Project. The plan defines the terrestrial ecological monitoring and associated mitigation that will be deployed to monitor and respond to associated impacts on sites, habitats and species that might be impacted by the Sizewell C Project as a whole, including:

- The Sizewell C nuclear power plant and associated development and works at the main development site including both the terrestrial and the marine works.
- two temporary park and ride sites; one at Darsham (the 'northern park and ride'), and one at Wickham Market (the 'southern park and ride').
- a permanent road to bypass Stratford St Andrew and Farnham (referred to as the 'two village bypass').
- a permanent road linking the A12 to west of the Sizewell C main development site (referred to as the 'Sizewell link road').
- permanent highway improvements at the junction of the A12 and B1122 east of Yoxford (referred to as the 'Yoxford roundabout') and other road junctions.
- a temporary freight management facility at Seven Hills on land to the south-east of the A12/A14 junction.
- a temporary extension of the existing Saxmundham to Leiston branch line into the main development site and other permanent rail improvements on the Saxmundham to Leiston branch line (collectively referred to as the 'rail proposals').

1.1.2 The measures defined within the plan are brought together from the following existing sources:

- The **Environmental Statement (ES)** [APP-159 to APP-582], submitted with the application.
- The **ES Addendum** [AS-179 to AS-260] submitted as part of the Proposed Changes to the DCO application.

- The draft Mitigation Strategies[1], draft Licenses[2] and their relevant method statements as appended to **Volume 2, Chapter 14** of the **ES** [AS-033], for individual species and species groups.
- The draft Licence Updates and their relevant method statements[3] as appended to **Chapter 2** of the **ES Addendum** [AS-208 and AS-209].
- The Draft Licences[4] and Non-Licensable Method Statements[5] appended to the Terrestrial Ecology and Ornithology Assessments for the Associated Development Sites (**Chapter 7** of **Volumes 3 to 9** of the **ES** [APP-363, APP-394, APP-425, APP-461, APP-494, APP-523 and APP-555]).
- Any monitoring measures relating to species considered within the **sHRA Report** [APP-145 to APP-152] and **Addendum to sHRA Report** [AS-173 to AS-178].

1.1.3 In addition, further detail is presented in this plan for those sites, habitats and species where no monitoring proposals were presented in the documents listed above. This plan also extends to defining monitoring measures relating to sites, habitats and species considered within the sHRA, in **Section 2** of this document.

1.1.4 An earlier draft of this plan was circulated to ecological stakeholders (Natural England, Environment Agency, East Suffolk Council, Suffolk County Council, RSPB and Suffolk Wildlife Trust). Two workshops were held on the draft and verbal comments on the draft where minuted and written comments solicited. This plan has been updated to address stakeholder comments received.

[1] Draft Mitigation Strategies have been developed for: Bat, Badger, Reptile, Water Vole and Natterjack Toad.
[2] Draft Licenses have been developed for: Badger, Water Vole, Natterjack Toad and Deptford Pink.
[3] Draft License updates for Deptford Pink, Natterjack Road and Water Vole were submitted as part of the Proposed Changes to the DCO application. In addition, an updated non-licensable method statement for Great Crested Newt was also submitted.
[4] For the Northern park and ride and Sizewell link Road, a draft licence was submitted for Great Crested Newt. For the two village bypass, draft licences were submitted for Badger and Water Vole. For the rail proposals a draft license was submitted for Bats
[5] For the Northern park and ride, Southern park and ride, Sizewell link Road and freight management facility, non-licensable method statements were submitted for Bats and Reptiles. For the two village bypass, non-licensable method statements were submitted for Bats, Great Crested Newt, Otter and Reptiles. For Yoxford roundabout and other highway improvements, a non-licensable method statement was only submitted for Reptiles. For the rail proposals, non-licensable method statements were prepared for Great Crested Newt and Reptiles.

1.2 Scope

1.2.1 This plan defines the monitoring requirements for sites, habitats and species associated with construction and operation of Sizewell C. The monitoring proposals are targeted at those sites, habitats and species which have the potential to be adversely impacted by the proposals, even though in most cases, no significant adverse effects are predicted in the **ES** and/or no adverse effects on integrity are predicted in the **sHRA Report** [APP-145 to APP-152] and **Addendum** [AS-173 to AS-178].

1.2.2 The objective is to provide a monitoring regime that gives confidence to stakeholders that impacts are detected as soon as possible and remedial actions can be deployed to mitigate those impacts.

1.2.3 The sites, habitats and species covered in this plan include the following:

- Designated sites (and their constituent habitats and species) which, given their proximity to the development sites have the potential to be adversely impacted by the proposals (or where there is some other impact pathway other than proximity), e.g. Sizewell Marshes SSSI, Minsmere European Sites;
- Species which are specially protected and for which there are mitigation measures proposed with the application to satisfy likely protected species licence requirements or to inform the need for additional measures, e.g. water voles, great crested newts, bats; and
- Additional species and habitats of more local value, such as invertebrates of dry grassland or fish within the watercourses, where monitoring is expected to demonstrate habitat establishment and the related colonisation by or maintenance of populations.

1.2.4 There are many overlaps between these sites, habitats and species and cross-referencing between tables is provided where relevant.

1.3 Structure

1.3.1 This plan is presented in four substantive sections: three sections covering the main development site (split according to the category of receptor as described below); and one section to cover the associated development sites. The sections are structured to provide details of the proposed monitoring and mitigation measures on a receptor by receptor basis to ensure all relevant measures pertaining to each receptor can be identified and tracked efficiently (for example, all of the terrestrial ecology measures

relevant to reptiles at the main development site are comprised in section 4.6 of the plan). The approach to the timing of implementation of each measure is defined in each section, for example for the main development site, the years of construction (assumed to be Y1 to Y12) and the years of operation (Y13 onwards) are used.

1.3.2 The plan is presented in the following structure:

- Section 2: Main Development Site – Designated European Sites
  - Minsmere European Sites and Sandlings SPA (North)
  - Other European Sites
- Section 3: Main Development Site: Designated Sites (Nationally and locally designated sites) and habitat creation areas:
  - Sizewell Marshes SSSI
  - Suffolk Shingle Beaches CWS
  - Habitat Creation Areas
    - Marsh Harrier compensatory habitat area
    - Studio Field Complex
    - Aldhurst Farm (non-wetland components)
    - Temporary Construction Area
- Section 4: Main Development Site – Protected Species.
  - Invertebrates
  - Fish
  - Amphibians (Natterjack Toad)
  - Bats
  - Reptiles
  - Terrestrial Mammals.
    - Badger.
    - Otter.
    - Water Vole.
- Section 5: Associated Development Sites.

- Great Crested Newt
- Bats
- Reptiles
- Terrestrial Mammals (Water Voles, Otters)

1.4 Related documents

1.4.1 The monitoring measures outlined within this plan should be read alongside those detailed within the **Code of Construction Practice** (CoCP) (Doc Ref. 8.11(C)). The **CoCP** has been prepared to provide a clear and consistent approach to the control of Sizewell C construction activities on the main development site and associated development sites to maintain satisfactory levels of environmental protection, and limit disturbance from construction activities as far as reasonably practicable. The **CoCP** is secured by Requirement 2 (Doc Ref. 3.1(D)).

1.4.2 The **CoCP** is provided in three parts: Part A: Project Wide Controls sets out how construction activities will be managed and controlled in order to deliver many of the mitigation commitments arising from the construction stages of the Sizewell C Project; Part B: Main Development Site sets out the further measures relevant to the main development site; and Part C: Offsite Associated Developments sets out those measures relevant to the off-site associated developments.

1.4.3 Part B Section 6.2 of the **CoCP** defines the monitoring measures that are anticipated to be set out within the Terrestrial Ecology Monitoring and Mitigation Plan.

1.4.4 As a result, this Plan will consider:

- Success of protective measures for retained vegetation, or newly established vegetation within the order limits (see **Section 2** of the Plan).
- Bat use of retained corridors within the order limits (including Bridleway 19 alignment, northern edge of Kenton Hills and at the SSSI Crossing) (see **Section 3.5** of the Plan).
- Ongoing use of any retained bat roosts within order limits (see **Sections 3 and 4** of the Plan).

- Any incidents associated with protected species which are unexpectedly detected within the active construction site (see **Sections 3 and 4** of the Plan).

1.4.5 This plan provides details of further measures beyond those listed above relating to sites, habitats and species.

1.4.6 The **CoCP** also commits to ecological supervision requirements at all sites, these include:

- An Ecological Clerk of Works (ECoW) would be an experienced ecologist, or similarly competent person. The ECoW would be appointed to be responsible for overseeing on-site ecological mitigation and ensuring that the ecological measures in the CoCP are implemented.
- All vegetation removal will be supervised by ECoW and will have regard to the breeding birds and any additional measures that may be defined in a relevant protected species licence or mitigation strategy.
- If a protected species or signs of a protected species are found within the active construction site, the ECoW should be contacted immediately to advise on the appropriate course of action.

1.4.7 In addition to the **CoCP**, the following relevant documents should also be read in conjunction with this document:

- **Outline Landscape and Ecology Management Plans** (oLEMPs) for the **Main Development Site** [REP1-010] , **Sizewell Link Road** (Doc Ref. 8.3 B(A)) and the **Two Village Bypass** (Doc Ref. 8.3 A(A));
  - The oLEMPs seek to provide clear objectives and general principles for the establishment and longer-term management of the landscape, and ecological mitigation proposals identified for the for the area within the relevant application boundary.
  - The oLEMPs provides the framework for the relevant Landscape and Ecological Management Plan (LEMP) and provides further details of the management measures and implementation of the habitat created, along with ongoing monitoring arrangements.

  - The monitoring measures outlined within the oLEMPs are referenced throughout the plan and are replicated, in full, within **Appendix 4 and 5**.

- **Outline Dust Management Plan** [APP-213]
  - This provides details of dust monitoring measures that would need to be undertaken by contractors during the construction of the Sizewell C Project.
- **Noise Mitigation Scheme** [REP2-034]
- **Noise Monitoring and Management Plan** (in preparation)
- **Coastal Processes Monitoring and Management Plan** [AS-237]
- **Fen Meadow Strategy** [AS-209]
- **Wet Woodland Strategy** ([REP1-020]
- **sHRA Report** [APP-146 to APP-152] and **Addendum** [AS-173 to AS-178].
- Draft protected species licenses[6] for:
  - Deptford Pink (Doc Ref. 6.14C11(A))
  - Natterjack Toad (Doc Ref. 6.3 14C7B(A))
  - Great Crested Newt [AS-209]
  - Bats [APP-252]
  - Water Vole (Doc Ref. 6.3 14C6B(A))
  - Otter (Doc Ref. 6.14C10(A))
  - Badger (Doc Ref. 6.14C4B(A))
  - Two Village Bypass: Badger (Doc Ref. 6.6 7A.5A(A))
  - Two Village Bypass: Otter (Doc Ref. 6.6 7A.5A(B))
  - Northern Park and Ride: Great Crested Newt [APP-364]
  - Sizewell Link Road: Great Crested Newt [APP-462]

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- **Reptile Mitigation Strategy** [APP-252]
- **Freshwater Fish and Aquatic Invertebrates Mitigation Strategy** (Doc Ref. 8.11(C))
- **Monitoring and Mitigation Plan for Minsmere - Walberswick European Sites and Sandlings (North) European Site** (Doc Ref. 9.15(A))
- **Monitoring and Mitigation Plan for Sandlings (Central) and Alde-Ore Estuary European Sites** (Doc Ref. 9.56).

1.4.8 It should be noted that any monitoring included in the draft protected species licenses listed under 1.3.6 may be varied before those protected species licenses are granted, as a result of consultation with Natural England.

1.4.9 An updated and final version of this plan will be produced within the examination timetable which will be aligned with the measures within the updated draft final protected species licenses. It is that final version of the plan which would be secured under draft requirement 4 of the **draft Development Consent Order** (DCO) (Doc Ref. 3.1(D)).

1.4.10 In the event that the final versions of the protected species licenses as issued by Natural England vary the monitoring requirements in relation to any given protected species at any particular site, then the monitoring requirements in that licence would supersede the monitoring requirements in this plan, for the relevant period defined in the licence.

1.5 Survey Methodologies and Survey Reports

1.5.1 This plan does not include detailed survey methodologies although references are given to relevant standards and / or methodologies in existing survey reports where this is appropriate.

1.5.2 Survey methodologies would be provided to the Environment Review Group for information and comment, prior to the surveys being undertaken.

1.5.3 Survey reports would be shared with the Environment Review Group within two months of the completion of a survey within that year.

1.6 Governance

1.6.1 The plan is suitable for securing under Requirement 4 of the draft DCO (Doc Ref. 3.1(D)).

1.6.2 Whilst the monitoring and any mitigation required under this plan will be the responsibility of the applicant, the plan provides for consultation and agreement with the Environment Review Group within **Sections 2-5** as follows:

- on the survey methodologies used, where these are not defined within this plan;
- on whether the spatial or temporal scope of a survey can be reduced or, in relation to operational monitoring, needs to be extended beyond the typical five year operational monitoring period;
- to review method statements prepared for works in the areas of temporary land take in the Sizewell Marshes SSSI, as defined in the ES;
- on whether the results of monitoring identify a potential need for any remedial mitigation;
- on the remedial mitigation measures to be deployed.

1.6.3 Any remedial mitigation measures deployed in accordance with **Sections 2-5** of this plan are to be sufficient to ensure that the impacts and effects are no worse than those defined in the **ES** (APP-159 to APP-582], the **ES Addendum** [AS-179 to AS-260], the **sHRA Report** [APP-145 to APP-152] and the **Addendum to the sHRA Report** [AS-173 to AS-178] as relevant. The only exception to this is in relation to those sites, habitats and species for which a significant adverse effect is predicted in the **ES** (e.g. barbastelle bats). In these cases, the measures should target reduction of the residual effects to not significant.

2. Main Development Site - Designated Sites and Habitats (Habitat Sites, formerly European Sites[7])

2.1 Introduction

2.1.1 This section defines the ecological monitoring that will be undertaken in respect of European sites.

2.2 Minsmere European sites and Sandlings SPA (North)

a) Disturbance due to increase in recreational pressure

2.2.2 Recreational management measures at Westleton Heath, Dunwich Heath and other heathland areas within the Minsmere European sites and the Sandlings SPA (North) will be introduced, in agreement with land managers (RSPB, National Trust, Natural England, Forestry England and others), to minimise the potential for any increase in recreational disturbance pressure on habitats and breeding bird populations of the SAC, SPA and Ramsar site. A draft Monitoring and Mitigation Plan for the Minsmere European sites was issued to the RSPB, National Trust and Natural England in February 2021 and regard was taken of the feedback in preparing the final version of the Minsmere plan, which has been extended to cover the Sandlings SPA (North) and is renamed the Monitoring and Mitigation Plan for Minsmere - Walberswick and Sandlings (North) (Doc Ref. 9.15(A)). The measures in that plan are [proposed to be] secured under the DCO Deed of Obligation (Doc Ref. 8.17(E)).

2.2.3 Prior to the Sizewell C construction phase commencing, baseline monitoring of the number of recreational users will be undertaken in accordance with the Monitoring and Mitigation Plan for Minsmere -Walberswick and Sandlings (North) at locations defined in that plan. Subject to covid-related restrictions being lifted, this survey will be undertaken in summer 2021 or as soon as the Covid-19 rules allow.

2.2.4 The Monitoring and Mitigation Plan for Minsmere - Walberswick and Sandlings (North) includes a suite of initial mitigation measures which will be

[7] 'SACs and Special Protection Areas (SPAs) in the UK no longer form part of the EU's Natura 2000 ecological network. The 2019 Regulations have created a national site network on land and at sea, including both the inshore and offshore marine areas in the UK. The national site network of 'Habitat Sites' includes:

- existing SACs and SPAs
- new SACs and SPAs designated under these Regulations

Any references to Natura 2000 in the 2017 Regulations and in guidance now refers to the new national site network.' See https://cieem.net/brexit-changes-to-the-habitats-regulations/

deployed at commencement of construction. These initial mitigation measures will be deployed in any event and are not contingent on a particular monitoring trigger. Monitoring will be repeated during construction at the designated locations and if monitoring identifies an increase in impacts which can be attributed to recreational displacement from the Sizewell C Project, then further local mitigation measures, identified within the Monitoring and Mitigation Plan for Minsmere - Walberswick and Sandlings (North) aimed at reducing the impacts of the additional recreational disturbance, will be implemented.

b) Dedicated species monitoring

2.2.5 This section defines proposed monitoring measures relating to relevant qualifying interest features of the Minsmere Habitat sites.

Table 2.1: Monitoring Measures Relating To Relevant Qualifying Interest Features of The Minsmere Habitat Sites

Qualifying Feature	Project Period and Years	Timing	Description[1]	Targets and Effectiveness Measure	Potential Interventions	Securing mechanisms
Breeding marsh harrier (foraging activity)	Construction Y1-Y12 Surveys to encompass full extent of construction period.	Annual during Phases 1 and 2 of construction (as defined in the ES). The need for subsequent monitoring is dependent on outcome of monitoring during Phases 1 and 2 but as a minimum would be every second year for remainder of construction period.	Surveys of foraging activity levels of marsh harrier to be undertaken: • Using the same High Visibility Areas (HVAs) as for collection of baseline data plus the marsh harrier habitat improvment area • Between April and September • Using same methods as for collection of baseline data on foraging activity levels of marsh harrier The survey locations will be the same as used for the 2020 baseline surveys as defined by Figure 1 of the **Breeding Bird and Waterfowl Survey Report** [AS-021].	The target is to ensure that foraging actvity for marsh harriers on the EDF Energy estate is not materially different than at present such that productivity of breeding marsh harriers of the SPA is maintained. This will be achieved by the following: • Determining changes in usage of foraging areas by marsh harrier around the Main Development Site during the construction period (and particularly on the Sizewell Marshes SSSI) • Determining the extent to which marsh harrier use the habitat improvement area and whether usage of this area increases or reduces with time. • Determining whether there is any correlation between changes (particularly any reductions) in usage of foraging areas (particularly Sizewell Marshes) and marsh harrier breeding productivity (as measured by RSPB for birds nesting on the RSPB Minsmere Reserve).	Further habitat enhancements to be deployed if (i) marsh harrier usage of Sizewell Marshes SSSI declines and (ii) if this is not offset by predicted levels of usage of the habitat improvement areas to the rates defined in the **sHRA Report** [APP-146 to APP-152] and **Addendum** [AS-173 to AS-178] of the habitat improvement area.	Requirement 4
Breeding waterbirds (abundance and	Construction Y1-Y12	Annual during Phase 1 of construction.	Survey of usage of Minsmere South Levels using standard surveys	• Determine any changes in usage of the Minsmere South levels by breeding waterbirds as	Further boundary screening and or other approaches to noise	Requirement 4

Qualifying Feature	Project Period and Years	Timing	Description[1]	Targets and Effectiveness Measure	Potential Interventions	Securing mechanisms
distribution for avocet, gadwall, shoveler and teal; indication of extent of usage for bittern)	Surveys to encompass full extent of construction period.	Subsequent monitoring dependent on outcome of monitoring during Phase 1 but likely to be at least every second year for remainder of construction period.	techniques, aligned with RSPB surveys wherever possible. The survey extent will be the same as used for the 2020 baseline surveys as defined by Figure 1 of the **Breeding Bird and Waterfowl Survey Report** [AS-021]. Surveys would follow methods used for the collection of baseline data and would be undertaken between April and June in relevant years.	a result of construction of Sizewell C	reduction and visual disturbance to lessen any apparent impacts and to maintain populations . Any potential adverse effects on integrity deemed to arise through any increased recreational use of the adjacent footpaths to be mitigated through measures in the Monitoring and Mitigation Plan for Minsmere-Walberswick European site and Sandlings (North) European site	
Non-breeding waterbirds (abundance and distribution)	Construction Y1-Y12 Surveys to encompass full extent of construction period.	Annual during Phase 1 of construction. Subsequent monitoring dependent on outcome of monitoring during Phases 1 but likely to be at least every second year for remainder of construction period.	Survey of usage of Minsmere South Levels using standard surveys techniques, aligned with RSPB surveys wherever possible. Surveys would follow methods used for the collection of baseline data and would be undertaken in relevant years between November and March. These project-specific survey data would also be augmented with the latest available Wetland Bird Survey	• Determine any changes in usage of the Minsmere South levels by non breeding waterbirds as a result of construction of Sizewell C	Further boundary screening and or other approaches to noise reduction and visual disturbance to lessen any apparent impacts and to maintain populations. Any impacts deemed to arise through any increased recreational use of the adjacent footpaths to be mitigated through measures in the	Requirement 4

Qualifying Feature	Project Period and Years	Timing	Description[1]	Targets and Effectiveness Measure	Potential Interventions	Securing mechanisms
			(WeBS) counts and feedback from the wardens (e.g. regular observation records). The survey locations will be the same as used for the 2020 baseline surveys as defined by Figure 1 of the **Breeding Bird and Waterfowl Survey Report** [AS-021].		Monitoring and Mitigation Plan for Minsmere-Walberswick European site and Sandlings (North) European site	

[1]Proposed surveys would follow the same methods as used for the collection of baseline data, with the details of these methods provided in the **sHRA Report** [APP-146 to APP-152] and **Addendum to sHRA Report** [AS-173 to AS-178].

2.3 Other European Sites

2.3.1 In addition to the potential disturbance due to recreational pressure at the Minsmere European sites (covered in **Section 2.2** above), the construction of Sizewell C could also result in changes to recreational pressures at other European sites, and marine vessels could cause disturbance to red-throated divers.

2.3.2 The approach to the monitoring of potential recreational pressures at the relevant European sites is described in the Monitoring and Mitigation Plan for Sandlings (Central) and Alde-Ore Estuary (Doc Ref. 9.56).

2.3.3 Monitoring is also proposed in respect of the potential for vessel disturbance to wintering red-throated divers, in the context of the Outer Thames Estuary SPA, in **Table 2.2** below:

Table 2.2: Monitoring Measures Relating To Relevant Qualifying Interest Features of The Outer Thames Estuary SPA Sites

Qualifying Feature	Project Period and Years	Timing	Description	Targets and Effectiveness Measure	Potential Interventions	Securing mechanisms
Wintering Red-throated Divers	Construction Y1-Y3	Annually during winter during Phase 1 of construction (marine construction and initial vessel movements) . Need for any subsequent monitoring dependent on outcome of monitoring during Phase 1 and to be agreed via the Environment Review Group	Surveys of vessel-based disturbance to red-throated diver to be undertaken: • Using observers aboard vessels undertaking deliveries to Sizewell C and / or the use of drone surveys • Surveys to determine extent to which vessels encounter and displace this species	Target is to ensure that red-throated diver populations are not adversely impacted by Sizewell C vessel movements, by regular displacement of foraging or resting birds. This will be achieved by determining the extent of any vessel based disturbance to wintering red-throated divers in the SPA during the early phases of the construction period and undertaking corrective actions in accordance with the . **Outline Vessel Management Plan** (see right)	In discussion with the Environment Review Group determine whether local alterations to vessel routing is possible in accordance with the **Outline Vessel Management Plan**[8] if vessel movements are causing extensive displacement of significant populations of red-throated divers.	Requirement 4

[8] **Outline Vessel Management Plan** will be submitted in draft to Examination at Deadline 6

3. Main Development Site - Designated Sites (Nationally and locally designated sites) and habitat creation areas

3.1 Introduction

3.1.1 This section focuses on monitoring of habitats, rather than species, which are covered in **Section 4**.

3.1.2 The following sites are covered in this section:

- Designated sites:
  - Sizewell Marshes SSSI (and related sites managed to provide compensatory habitats)
  - Suffolk Shingle Beaches CWS
- Main Development Site habitat creation areas (where these are not related to SSSI habitat compensation)

a) Sizewell Marshes SSSI (and related compensation habitats)

3.1.3 The existing Sizewell Marshes SSSI designation covers 105.4ha, of which 6.52ha would be lost to permanent land take and 3.02ha would be used during construction (temporary land take). A total of 95.86 ha would therefore be unaffected by land take and retained and managed in accordance with current management practices. Compensatory habitats have been established at Aldhurst Farm (open water, reedbeds) and will be established at Pakenham (fen meadow, wet woodland), Benhall (fen meadow, wet woodland) and Halesworth (fen meadow) as well as on the main development site itself (wet woodland). Monitoring will be undertaken at each site as described below.

3.1.4 The following documents also reference monitoring measures that will enable the protection of the SSSI during construction of the Sizewell C Project:

- Part B of the **CoCP** provides details of:
  - Control measures to mitigate potential effects on the retained wet woodland and fen meadow habitats and the potential requirement for additional monitoring.
  - The requirements for groundwater and geomorphological monitoring within the SSSI.

- The **Outline Dust Management Plan** identifies that a construction dust management plan will be developed to minimise the generation of dust. Monitoring will be put in place to determine the success of the dust mitigation measures. If at any point dust levels exceed a deposition rate of 0.5g/m2/day then dust generating activities will be stopped until additional mitigation measures have been put in place.

i. Retained areas of the SSSI

3.1.5 As outlined above under the Sizewell Marshes Water Management Plan, the fen meadow habitats within the Sizewell Marshes SSSI have been subject to a long running monitoring programme using twelve monitoring plots undertaken on behalf of SWT. During the construction and operational phases of Sizewell C this monitoring programme will continue, in particular recording the extent of the two sensitive plant assemblages within the Grade 1 and 2 fen meadow, namely low growing species and species indicative of nutrient poor conditions.

3.1.6 The Leiston Beck and other relevant watercourses within the SSSI will be monitored to determine their status in the context of the Water Framework Directive.

3.1.7 **Table 3.1** provides the monitoring proposals for the retained areas of the SSSI.

Table 3.1: Sizewell Marshes SSSI - Monitoring of retained areas (Construction and Operation)

Year	Monitoring Survey	Timing	Description	Targets and effectiveness measures	Potential interventions	Securing mechanisms
Y1 to Y12 (inclusive)	Surveys over the course of the construction phase will focus upon any change in the vegetation communities, specifically the M22 community as defined in the National Vegetational Classification and also any decline in populations of rare or scarce plant species.	Hydrological monitoring would be ongoing throughout using the approaches defined in the Water Levels Monitoring Plan. Botanical monitoring would be aligned with the existing approach (see right), but annual monitoring would be undertaken	**Hydrological [summary only]:** Hydrological monitoring will include surface and groundwater levels and water chemistry of the Leiston Beck (to determine WFD status) and of waterbodies within the wider SSSI. Hydrological monitoring within the SSSI will include some element of survey of local depressions or small topographic features within fen meadow habitats favoured by low lying and / or rarer species (see also below) **Botanical:** Fen Meadow Communities: Twelve monitoring plots, measuring 10m x 10m, within Sizewell Marshes SSSI have been surveyed once every two years since 1995 on behalf of SWT. The purpose of the monitoring has been to determine the effects the management regimes within the Marshes have had on the botanical composition of the fen meadow plant communities, including the M22 community. Six plots have been assessed in odd years since 1995 while the remaining plots have been assessed in even years. This monitoring will continue. Targeted botanical plant monitoring: This will be undertaken for low growing plant species which occupy shallow depressions within the fen meadow communities and which might otherwise be missed by the existing monitoring	The target is for retained SSSI habitats to suffer no degradation of plant, invertebrate or bird communities and no loss of rare species, which could be attributable to the construction of Sizewell C, through hydrological change (whether water level or water chemistry) or other impacts.	The **Water Monitoring Plan** defines the approach which will ensure water levels and water quality within the SSSI are maintained. The existing and newly proposed water control structures within the Sizewell Marshes SSSI would be used to maintain water levels. In the event of the botanical monitoring detecting an adverse floristic change, the need for mitigation would be discussed and agreed with Natural England and Suffolk Wildlife Trust. Mitigation could include additional stock grazing or a cutting regime to remove excess vegetation. The wider ecology stakeholder group will be consulted as part of this review process through the Environment Review Group and any further measures will be discussed and agreed in advance.	Requirement 4

Year	Monitoring Survey	Timing	Description	Targets and effectiveness measures	Potential interventions	Securing mechanisms
			plot approach described above. The targeted monitoring will also include rare and scarce plant species, including but not limited to *Isolepis cernua* (Slender club-rush) and *Blysmus compressus* (Flat sedge), two plants which are present in the fen meadow habitats and are rare in Suffolk. **Breeding Birds:** A breeding bird survey of the SSSI would be undertaken annually during construction. **Invertebrates:** Aquatic Invertebrates of the Leiston and Sizewell drains would be monitored in accordance with WFD protocols as defined in **Table 4.1** below. Invertebrates of retained fen meadow and wet woodland would also be monitored as defined in **Table 4.1** below.			
Y13 to Y17	Surveys over the course of the operational phase will focus upon any change in the vegetation communities and also any decline in populations of rare or scarce plant species.	Hydrological monitoring would be defined in the Water Levels Monitoring Plan. Botanical monitoring would be aligned with the existing approach (see right), but annual	As above Monitoring of the SSSI could be extended beyond Y17, in any of the above areas, if there is evidence of an adverse impact and if this is agreed by the Environment Review Group	As above		Requirement 4

Year	Monitoring Survey	Timing	Description	Targets and effectiveness measures	Potential interventions	Securing mechanisms
		monitoring would be undertaken				

ii. Areas of the SSSI subject to temporary land take

3.1.8 As noted above, approximately 3 ha of the Sizewell Marshes SSSI would be used temporarily during the construction of Sizewell C, primarily during the early years of construction to create the SSSI Crossing and the diversion of the Sizewell Drain to create the western edge of the new platform. These areas would be subject to varying degrees of disturbance but soil compaction would be minimised to ensure that the habitats can quickly recover or become re-established. Method statements prepared for works in the retained areas of the SSSI would be the primary mechanism for controlling impacts in these areas and would be reviewed and approved by the Environment Review Group. This commitment is secured through Requirement 12C (Doc Ref. 3.1(D)).

3.1.9 Monitoring would be undertaken in these areas as follows:

- Baseline monitoring of vegetation and soils prior to use of the relevant area.
- Botanical monitoring to review the extent of recovery and/or re-establishment and to ensure the botanical assemblage aligns with the SSSI interest features.
- Operational phase monitoring to review the botanical assemblage and consider the SSSI status and to ensure it remains in a favourable condition.

3.1.10 Further details of monitoring for these areas would be provided in the method statements.

iii. Aldhurst Farm wetlands

3.1.11 The Aldhurst farm wetlands provide compensatory habitat for the loss of similar habitats from the SSSI. They are already well established (completed in 2016) and supports plant and bird species characteristic of reedbed habitat. A management strategy for the site[9], which includes monitoring targets, is in place. The ongoing monitoring approach is as follows:

[9] EDF Energy 2014, Aldhurst Farm Habitat Creation Scheme, Ecology and Landscape Management Plan

- Monitoring of fencing and other access arrangements, to determine the need for any remedial actions, to ensure wetland habitats are adequately protected.
- Monitoring of recreational usage.
- Botanical survey of wet reed/reed-based tall herb fen and ditches to assess development and status against targets every three years or as otherwise agreed with East Suffolk Council.
- Monitor water level in the basins.
- Monitor water quality (pH) in the basins.
- Monitor extent and depth of open water.
- Monitor extent of filamentous algae.
- Monitor encroachment of undesirable plant species within reedbeds.

3.1.12 This approach will be applied during the construction of Sizewell C as defined within the Aldhurst Farm management strategy. The Aldhurst Farm management strategy will be updated in 2021 to include the same monitoring commitments.

iv. Fen Meadow compensation sites

3.1.13 The fen meadow compensation areas at Benhall, Halesworth and Pakenham are to be created during the construction phase and will compensate for fen meadow permanently lost from Sizewell Marshes SSSI as a result of the Sizewell C Project. The three fen meadow compensation areas will provide fen meadow habitats to compensate for the permanent loss of approximately 0.46 ha of fen meadow habitat from within Sizewell Marshes SSSI. In order to create the habitats, minor changes to existing watercourses and field drains may be required to raise water levels.

3.1.14 The measures to create fen meadow habitats will be defined in Fen Meadow Plans which are to be developed in general accordance with the **Fen Meadow Strategy** [AS-209], as provided for by Requirement 14A (Doc Ref. 3.1(D)).

3.1.15 Once the initial capital works have been undertaken to establish the habitats on these sites, the sites will then require the development of site-specific integrated management and monitoring programmes to ensure they meet the objectives of the habitat creation requirements.

3.1.16 Given the expected extended periods likely required to establish fen meadow habitats, the **Fen Meadow Strategy** [AS-209] provides that monitoring will extend into the operational period of the power station to ensure the habitats are becoming established and being maintained in accordance with the relevant habitat objectives.

3.1.17 The frequency of monitoring during the construction and operational phases is set out in the **Fen Meadow Strategy** [AS-209] and will be set out in greater detail in the Fen Meadow Plan which will be prepared under that strategy. The Fen Meadow Plan will include monitoring of Pakenham Fen SSSI, which lies adjacent to the Pakenham fen meadow compensation area.

3.1.18 In the event that any water control structure that could impede fish and eel passage is introduced at these fen meadow compensation areas, it will require a suitable fish pass to be included in the design. Monitoring will be included in the Fen Meadow Plan to ensure any such structures function as required and does not become a barrier to movement. No such structures are considered likely to be required.

3.1.19 The monitoring detail for these sites would be agreed via the approval of the Fen Meadow Plan by East Suffolk Council and the relevant Statutory Nature Conservation Body.

v. Wet woodland compensation sites

3.1.20 The approach to wet woodland compensatory habitats to compensate for the loss of wet woodland associated with the SSSI crossing and the diversion of the Sizewell Drain is set out in the **Wet Woodland Strategy** [REP1-020] which will be submitted to and approved by East Suffolk Council, in consultation with the relevant Statutory Nature Conservation Body pursuant to Requirement 14B (Doc Ref. 3.1(D)). The approach which will be used to provide compensatory habitats to provide both on-site and some off-site habitat compensation areas.

3.1.21 A total of 0.7ha of new on-site wet woodland is proposed in the application, in the north-east corner of the main development site. Off-site the approach is to create new wet woodlands at two of the three fen meadow compensation sites (Benhall and Pakenham).

3.1.22 Once the initial capital works have been undertaken to establish the wet woodland habitats, the sites will then require the development of site-specific integrated management and monitoring programmes to ensure they meet the objectives of the habitat creation requirements.

3.1.23 Given the expected extended periods likely required to establish wet woodland habitats, monitoring will extend into the operational period of the power station to ensure the habitats are becoming established and being maintained in accordance with the relevant habitat objectives.

3.1.24 The frequency of monitoring during the construction and operational phases is set out in the **Wet Woodland Strategy** [REP1-020] and will be set out in greater detail in the Wet Woodland Plan which will be prepared under that strategy. The monitoring of these sites would be agreed via the approval of this plan by the relevant ecological stakeholders, including Natural England.

b) Suffolk Shingle Beaches CWS

3.1.25 That part of the Suffolk Shingle Beaches CWS which is within the site boundary would be removed at an early stage of construction to enable the new Sizewell C Coastal defences to be constructed. The surface sediments would be retained and stockpiled for later use in habitat re-establishment. Once the coastal defences have been completed, coastal dune and vegetated shingle habitats would be re-established over them using a similar approach as was used in the 1980s for Sizewell B.

3.1.26 The monitoring requirements for coastal processes impacts are included with the **Coastal Processes Monitoring and Management Plan** (Doc Ref. 6.14(A). The Plan has been developed to ensure as far as possible, the maintenance of the extent of foreshore sediments covering the hard coastal defence feature.

3.1.27 The focus of ecological monitoring as defined in **Table 3.2** will be the extent of vegetation establishment, the vegetation community which establishes and the associated invertebrate interest.

Table 3.2: Monitoring for Suffolk Shingle Beaches CWS

Year	Monitoring Survey	Timing	Description	Targets and effectiveness measures	Potential interventions	Securing mechanism
Y1 to Y12 (inclusive)	Survey to determine the success of the re-establishment of sand dune and shingle habitats and species on the reinstated foreshore.	Monitoring would be undertaken once the engineering works to re-instate the foreshore have been completed and then annually for the following 5 years Surveys would then be undertaken every two years.	Vegetation establishment Botanical monitoring using visual inspection and quadrats would be used to determine the vegetation communities which become established. The NVC will be used as the standard approach. Invertebrate community establishment See **Table 4.1**	The target is to achieve habitat establishment by year 12 such that vegetation characteristic of the existing CWS, as measured using the NVC approach, is re-established across reinstated areas.	Review and understand reasons for (any) reduced success, particularly in first 5 years, after engineering works to re-instate the foreshore have been completed and when opportunities for positive intervention are greatest. Devise appropriate mitigation/remediation strategies, which could include further remedial habitat creation measures or supplementary planting. The wider ecology stakeholder group will be consulted as part of this review process through the Environment Review Group and any further measures will be discussed and agreed in advance.	Requirement 4
Y13 to Y17	As above	Habitat assessments would be carried out in Y13, Y15 and Y17	As above	As above		Requirement 4

3.2 Habitat Creation areas

3.2.1 The following main habitat areas have been created or will be created as part of the Sizewell C Project on the EDF Energy estate:

- Marsh Harrier compensatory habitat area (provision within the EDF Energy estate).
- Studio Field complex.
- Aldhurst Farm (wetlands and adjacent grassland areas) (see **Section 3.1** for measures related to wetlands).
- Temporary Construction Area – habitats created in accordance with the **Main Development Site oLEMP** [REP1-010], once the temporary construction area is removed.

3.2.2 The following sub sections detail the monitoring measures associated with habitats listed above that have been or are proposed to be created and excludes those areas which have been created directly to address land take of habitats from the SSSI, which are covered in **Section 3.1** above.

c) Marsh Harrier compensatory habitat area

3.2.3 An area at the northern end of the EDF Energy estate is being enhanced to create compensatory habitats for foraging marsh harriers. The habitat enhancement is being undertaken in general accordance with the **Marsh Harrier Mitigation Area Feasibility Report** [APP-259] as updated by the Marsh Harrier Habitat Creation Report updated version (in prep) and includes rough grassland, hedgerows, scrub plantings and a new 3ha wetland area.

3.2.4 Monitoring of the habitat establishment and prey abundance will be undertaken as defined in **Table 3.3**:

Table 3.3: Monitoring for Marsh Harrier Habitat Establishment

Year	Monitoring Survey	Timing	Description	Targets and effectiveness measures	Potential interventions	Securing mechanism
Y1 to Y12 (inclusive)	Survey to determine the success of establishment of foraging habitats for marsh harriers in accordance with the habitats proposals set out in Wood (in prep, ref) (See **Section 2** for monitoring of marsh harriers) Note: Monitoring for marsh harrier habitats is not required during the operational phase of Sizewell C.	Monitoring would be undertaken during the summer, every year during the construction period	Vegetation establishment: Botanical monitoring using visual inspection to determine the key vegetation communities which become established and that habitats are becoming established in accordance with the habitat proposals (see left), as follows: • Hedge and scrub plantings establishing • New wetlands, specifically reedbeds establishing	The target is to achieve habitat establishment in accordance with the habitat proposals (see left).	Review and understand reasons for (any) reduced success. Supplementary or replacement plantings will be used for any rates of greater than 10% of initial plantings across the two target habitat types. Devise further appropriate mitigation/remediation strategies, which could include further remedial habitat creation measures. The wider ecology stakeholder group will be consulted as part of this review process through the Environment Review Group and any further measures will be discussed and agreed in advance.	Requirement 4
Y1-Y12 (inclusive)	Survey to determine the success of establishment of prey species for marsh harriers (See **Section 2** for monitoring of marsh harriers) Note: Monitoring for marsh harrier habitats is not required during the operational phase of Sizewell C.	Monitoring would be undertaken during the summer, every year during the construction period	Small mammals would be monitored within the habitat improvement area using either signs or live trapping to give an index of abundance (sufficient to show whether abundance is increased in relation to management. change). Small birds such as meadow pipits and skylarks would be monitored would be monitored within the habitat improvement area via transect methods to determine abundance .		As above	Requirement 4

3.2.5 Monitoring of the *usage* of the habitat improvement area by marsh harriers (including breeding and wintering surveys) and of other areas used by foraging marsh harriers, including the Sizewell Marshes SSSI and other parts of the EDF Energy estate will be undertaken during construction as defined in **Section 2** of this document. Surveys will follow the same methodologies as previously applied, where practicable, using vantage point locations.

d) Studio Field Complex

3.2.6 Habitat enhancement on previous arable land at the Studio Field complex (Sizewell Gap area) in the south-west of the EDF Energy estate is ongoing and aims to create an extensive area of habitats for reptiles. This area will be used as a reptile receptor translocation site which will be used to receive reptiles from the main development site prior to site clearance. Monitoring of this area was undertaken in 2020 to determine existing use by reptiles (see **Reptile Survey Report 2020** [AS-036]).

3.2.7 Monitoring for reptiles is detailed in **Section 4.6** of this plan and covers the reptile translocation sites including the Studio Field Complex.

e) Aldhurst Farm (non-wetland components)

3.2.8 The Aldhurst Farm habitat creation scheme, whilst centring on wetland components, also includes the establishment of a mosaic of neutral and acidic grassland, heathland, scrub and scattered trees across the terrestrial parts of the site. A management strategy for the whole Aldhurst Farm site[10] is in place and includes monitoring targets for grassland habitat creation. **Section 3.1** provides details of the monitoring measures relating to the wetland areas to be created at Aldhurst Farm.

3.2.9 This approach will be applied during the construction of Sizewell C and for a period in the early years of operation as defined within the existing management strategy. The updated management strategy being prepared for Aldhurst Farm in 2021 will include the same monitoring commitments and include monitoring of the new access provisions and recreational usage. Irrespective of the production of the updated strategy, monitoring at Aldhurst Farm will include recreational activities given that the site is proposed to form part of the recreational mitigation package for displaced exiting recreational users and also for campus residents.

[10] EDF Energy 2014, Aldhurst Farm Habitat Creation Scheme, Ecology and Landscape Management Plan

3.2.10 This area will be used as a reptile receptor translocation site which will be used to receive reptiles from the main development site prior to site clearance. Monitoring for reptiles is detailed in **Section 4.6** of this plan and covers the reptile translocation sites including Aldhurst Farm.

e) Temporary Construction Area

3.2.11 At the end of the construction period, habitats will be established in accordance with the **Main Development Site oLEMP** [REP1-010].

3.2.12 The monitoring proposals for each habitat type are set out within the **oLEMP** [REP1-010] and are reproduced in **Appendix 4.** Specific and detailed monitoring prescriptions will be provided in a monitoring strategy produced by the contractor as part of the detailed design, produced in broad accordance with the **oLEMP** [REP1-010].

4. Main Development Site – Protected Species

4.1 Introduction

4.1.1 This section focuses on monitoring of species on and in the vicinity of the main development site, rather than habitats, which are covered in **Section 3**.

4.1.2 The following species or species groups are covered in this section:

- Invertebrates;
- Fish;
- Natterjack Toad;
- Reptiles;
- Bats; and
- Terrestrial Mammals (water voles, otters, badgers).

4.1.3 The following sub-sections summarise the terrestrial ecology monitoring requirements at the main development site. These are aligned with any measures already set out within the Environmental Statement but expanded with additional detail or further measures proposed as relevant.

4.2 Invertebrates

4.2.1 Habitats within the main development site and the EDF Energy estate support a number of protected invertebrate species, species with recognised conservation status and invertebrate assemblages of high conservation value and, in some cases, national importance. Sizewell Marshes SSSI is of national importance for invertebrates and the Suffolk Shingle beaches CWS is widely regarded as being of national importance for invertebrates.

4.2.2 The construction of Sizewell C has the potential to impact invertebrates through habitats loss and fragmentation, incidental mortality, disturbance and changes in water quality, coastal processes, local hydrology and air quality. Mitigation is proposed in the form of water level management to maintain existing wetland habitats as well habitat creation areas and in the longer term the habitat proposals in the **oLEMP** [REP1-010] for the temporary construction area described in **Section 3**. These habitat areas will become more diverse over time as additional plant species colonise these areas and

in turn these areas are expected to support a greater diversity of invertebrate species.

4.2.3 Monitoring will target invertebrate assemblages of national importance and high conservation value which are characteristic of the habitats to be lost to assess the extent to which these assemblages become established in the new habitats within the site boundary and across the wider EDF Energy estate.

4.2.4 The following areas will be the subject of monitoring for invertebrates to determine the impacts of the construction of Sizewell C and also the value of newly created habitat areas as mitigation for invertebrate assemblages:

- Sizewell Marshes SSSI: Leiston and Sizewell Drains, the associated wet woodlands and adjacent fen meadows as reinstated / retained within the site (to determine retention of aquatic and terrestrial invertebrate communities in these areas, with specific reference to Norfolk Hawker *Aeshna isosceles*), see also **Table 3.1**.
- Aldhurst Farm wetlands (to determine ongoing establishment of aquatic invertebrate communities in this area)
- Sandlings grasslands and associated habitats in the Studio fields complex, Aldhurst Farm and Marsh Harrier compensation area (to determine ongoing establishment of invertebrate communities associated with dry grasslands in these area)
- Suffolk Shingle Beaches CWS, once habitats have been re-instated (to determine establishment of terrestrial invertebrate communities in this area)
- Sandlings grasslands and associated habitats across the temporary construction area once these are in place (to determine establishment of terrestrial invertebrate communities in these areas)
- new wet woodland planting, reedbed and open water to be created in the north-east of the site (to determine establishment of aquatic and terrestrial invertebrate communities in this area)

4.2.5 The proposed monitoring approaches are more fully detailed in **Table 4.1** below. In this table and similar subsequent tables, the assumed Sizewell C construction period aligns with Years 1-12 and the operational period commences in Year 13.

Table 4.1: Terrestrial and Aquatic Invertebrate Monitoring (Construction and Operation)

Year	Monitoring Survey	Timing	Description	Targets and effectiveness measures	Potential interventions	Securing mechanism
Y1 to Y12 (inclusive)	Surveys over the course of the construction phase will focus upon the condition and quality of the habitats created and this will be compared to the habitat areas lost and baseline conditions collated (see also Section 3). Habitat monitoring and targeted invertebrate sampling would be undertaken throughout the construction phase to assess the effectiveness of the mitigation provided and to inform mitigation and management approaches.	Targeted aquatic invertebrate surveys, to WFD guidance, would be undertaken twice (Spring and late Summer) annually, Y1-Y12 Habitat assessments would be carried out in Y2, Y4, Y6, Y8, Y10 and Y12 Targeted invertebrate surveys would be undertaken in Y4, Y8 and Y12	Methodologies for aquatic invertebrate assemblages would be undertaken to recognized guidance, using a method aligned with the WFD, including Murray-Bligh 'kick netting' or 'sweep sampling' including spring sampling and lab analyses. Methodologies for terrestrial invertebrates would be undertaken to recognized guidance and would include sweeping netting, vacuum sampling, beating and the use of traps, where necessary. All methodologies would be standardized to enable repeatability and comparison across years. Surveys would focus upon the following locations: • Sizewell Marshes SSSI: Leiston and Sizewell Drains, the associated wet woodlands and adjacent fen meadows as reinstated / retained (see also Table 3.1). • Aldhurst Farm reedbed and ditch habitat. • Wet woodland creation in the north eastern extent of the site as well as the proposed new reedbed habitats. • Studio Fields complex mosaic habitats of scrub and acid grasslands.	The target is to retain in adjacent habitats or develop and maintain suitable created habitats for important invertebrate assemblages recorded within the baseline surveys. This includes peatland, marshland, wet woodland and dry grassland/ scrub mosaic habitats and specialist invertebrate assemblages associated with: • Reed fen and pools • Dead wood • Open short sward • Bare sand and chalk The effectiveness of the created habitats to be suitable for important invertebrate assemblages will be determined by the following: • The extent of habitat establishment and condition compared to the baseline conditions / habitat areas lost. • The invertebrate assemblages which become established and whether these are comparable to the baseline assemblages recorded prior to construction in similar habitats.	In the event of the habitat-based measures not being successful conditions will be reviewed along with the approaches being implemented in relation to maintenance and management additional measures will be put in place. Stakeholders will be consulted as part of this review process through the Environment Review Group and any further measures will be discussed and agreed in advance. Any required changes in management would be reflected in LEMP updates.	Requirement 4

Year	Monitoring Survey	Timing	Description	Targets and effectiveness measures	Potential interventions	Securing mechanism
			• Coastal strip, adjacent to works area within and adjacent to the Sizewell Beaches CWS (see also below) and within re-instated beach habitats.			
Y13 to Y17	Surveys undertaken on the former temporary construction area, once habitats have been created from Y13 Habitat condition assessments will continue over the course of the operational phase to Y17 as well as some targeted terrestrial invertebrate surveys.	Targeted aquatic invertebrate surveys, to WFD guidance, would be undertaken twice (Spring and late Summer) annually, Y13-Y17 Habitat assessments would be carried out in Y13, Y15 and Y17 Targeted invertebrate surveys would be undertaken in Y13 and Y17	Methodologies for aquatic invertebrate assemblages would be undertaken to recognized guidance using a method aligned with the WFD using a method aligned with the WFD, including Murray-Bligh 'kick netting' or 'sweep sampling' including spring sampling and lab analyses. Methodologies for terrestrial invertebrates would be undertaken to recognized guidance and would include sweeping netting, vacuum sampling, beating and the use of traps, where necessary. All methodologies would be standardized to enable repeatability and comparison across years. Surveys would focus upon the following locations: • Suffolk Shingle Beaches CWS (reinstated habitats) under the ambit of the oLEMP • Sandlings habitats created under the ambit of the oLEMP (once created towards the latter stages of the construction phase) • Habitats that take time to establish, such as wet woodland	The development of habitats on the former temporary construction area into a habitat mosaic suitable for important invertebrate assemblages associated with dry, open habitats recorded during preconstruction. The further development of wet woodland habitat suitability for the associated wet woodland fauna.		Requirement 4

4.3 Fish

4.3.1 Fish surveys undertaken in 2020 [AS-036] recorded eight species of fish within the Sizewell and Leiston drains, and adjacent waterbodies, in the north-east area of Sizewell Marshes SSSI (SSSI Triangle). The presence of European eel (*Anguilla anguillla*) was confirmed along with the presence of bullhead (*Cottus gobio*), a notable species usually found in waterbodies with gravel and pebble substrates.

4.3.2 The construction of Sizewell C has the potential to impact fish through habitat loss, fragmentation, obstruction of passage, entrapment changes in water quality and alteration of local hydrology (including water chemistry) and hydrogeology. The main impact will be during the realignment of the Sizewell drain and a **Freshwater Fish and Aquatic Invertebrates Mitigation Strategy** [AS-275] has been prepared which defines the approach which will be used for this. This will be secured as an annex to the **CoCP** and under Requirements 2 4 (Doc Ref. 3.1(D)).

4.3.3 **Table 4.2** outlines the proposed monitoring activities identified for fish during the construction and operational phases.

Table 4.2: Fish Monitoring Construction and Operation

Year	Monitoring Survey	Timing	Description	Target & Effectiveness measures	Potential interventions	Securing mechanism
Y1 to Y12 (inclusive)	Fish survey to monitor species using the waterbodies across the site with a focus on the SSSI, particularly the re-aligned Sizewell Drain and the Leiston Beck and to assess the functionality of installed fish/eel passes.	Y4, Y8 and Y12	A stop net and catch depletion method will be used [this will be effective at catching minor species and species which seek refuge in silt (lampreys & eels). Three runs will be used. Surveys will include areas immediately upstream and downstream of the SSSI Crossing	The target is to maintain fish species composition within the Sizewell Marshes SSSI and recruit species into the realigned Sizewell drain. The success criterion is that the fish assemblage present is broadly similar to the baseline fish assemblage, i.e. species diversity and abundance are similar (or greater).	In the event of the target not being met, a review of the conditions and survey monitoring will be carried out to determine the need for additional mitigation measures such as local improvements to channels. These measures would be discussed and agreed with the Environment Review Group and then implemented. Identify any potential barriers to movement within the Leiston Drain catchment.	Requirement 4
Y13 to Y17 (inclusive)	Fish survey to monitor species using the SSSI, particularly the Sizewell Drain and the Leiston Beck and to assess the functionality of installed fish/eel passes.	Y17				Requirement 4

*The operational monitoring requirements will be confirmed during the construction phase depending on the finding and success of mitigation implemented. This approach will be applied during the construction and for a period in the early years of operation.

4.4 Natterjack Toad

4.4.1 The Sizewell C Project is considered to have the potential to impact natterjack toad through:

- Habitat loss and fragmentation
- Disturbance
- Changes in local hydrology and hydrogeology, air quality and water quality

4.4.2 Natterjack toads were reintroduced in 2005 to a pond within Retsom's Field approximately 50m from the main development site boundary, where this species has successfully bred. A Water Management Zone is to be built within Retsom's Field but this will avoid the existing pond and also the rabbit warrens which are used for hibernation by the toads.

4.4.3 A series of mitigation measures are proposed to support and enhance the population status and would be implemented prior to construction of the Water Management Zone, including:

- Creation of a new pond
- Creation of new hibernation features
- Corvid spikes to be added to fence posts, on fences surrounding the ponds, to minimise the risk of predation

4.4.4 Natterjack toad adult counts have plateaued in recent years indicating the carrying capacity limit has been reached. The provision of the new ponds and artificial hibernacula should provide additional resources and steppingstone opportunities to improve linkages to pond N4. The full details of these measures will be agreed with Natural England through the protected species licence required for this species. A draft Natterjack toad mitigation strategy was included in the DCO application at **Volume 2, Chapter 14, Appendix 14.C.7A** of **ES** [APP-252] and a draft licence was included in the DCO application at **Appendix 2.9.C3** and **2.9.C4** of the **ES Addendum** [AS-209]. An updated draft licence was submitted to Natural England in July 2021 (Doc Ref. 6.3.14C7B(A)).

4.4.5 A natterjack toad monitoring programme, both during and after construction, will provide an understanding of the initial mitigation success and effectiveness and to identify whether any defects have occurred. **Table 4.3** provides a summary of the Natterjack toad monitoring requirements as

identified in the statutory documents and/or the draft Natterjack Toad protected species licence (Doc Ref. 6.3.14C7B(A)).

Table 4.3: Natterjack Toad Monitoring (Construction and Operation)

Year	Monitoring Survey	Timing	Description	Target and effectiveness measures	Potential interventions	Securing Mechanism
Y1-Y12 (inclusive) Construction phase assuming 12 years worst case	Condition assessment of existing and new ponds and terrestrial habitat as well as the artificial hibernacula feature. Population density assessment of natterjack toads present within the existing pond N1, N3 and the new pond N5 to be created. Presence/ absence surveys and potentially population density assessments based on findings of ponds N1, N3 and N5. Terrestrial habitat searches. Monitoring of the constructed artificial hibernacula structure through the distribution of carpet tiles in the vicinity of the feature to confirm if being used by natterjack toads. Botanical assessment of terrestrial habitats	Annually: April – July (ideally in damp conditions shortly after rainfall after daylight hours)	Continue with monitoring and surveillance exercises using established methodology on ponds N1, N3 and N5. It is assumed that RSPB will continue to monitor N4. Survey undertaken by a licensed natterjack toad surveyor. All three ponds (once N5 has been created) to be visited annually. Condition and suitability for natterjack toads to be reviewed. Natterjacks require a mosaic of habitats in fairly close proximity: wet slacks and pools of varying depths some of which hold water until mid- to late summer for breeding; short grassland and bare sand for feeding; and open sand ridges for burrows. Botanical surveys to NVC standard will be undertaken across Retsoms Field to determine any substantive changes to floristic composition. The annual survey findings will be submitted to Natural England as part of annual licence reporting.	Maintain current population and distribution (i.e. breeding within N1). Increase abundance and range through habitat creation and management by encouraging natural dispersal and translocation where needed (measured by increased adult counts in N1 and/or recruitment and success within other ponds). Surveys will confirm the level of uptake of the newly created ponds by the local natterjack toad population. Maintain grazing pressures within Retsom's by large domestic herbivores and by rabbits, who are the primary producers of bare sand. Artificial hibernacula should also help increase rabbit population. No adverse change to floristic composition of the	Review management of Retsom's field and its ponds. Specific measures could include: • checking pond condition and remedial action as required; maintenance of N1, N3 and N5; • further scrape/pond creation and reprofiling; • scrub removal and mowing and grazing regime amendment; • reinstatement following fire, acute pollution or other major damage; • removal of any Common Toads and their spawn from N1, N3 and N5 may also be necessary, whilst habitats are being restored; • further habitat creation measures, such as localised creation of bare areas, or small exclosures for development of heathland patches. The need for intervention would be identified by survey results, including any adverse change in the monitored population (adult population decline) or adverse	PSL (TBC)

Year	Monitoring Survey	Timing	Description	Target and effectiveness measures	Potential interventions	Securing Mechanism
				grassland sward in Retsom's Field	habitat change (pond quality, grassland diversity). Natural England, RSPB and SWT will be consulted as part of the intervention process through the Environment Review Group and any further measures will be discussed, agreed and implemented.	
Y13, Y15, Y17 Every two years for 5yrs following completion of construction	Condition assessment of all ponds including the on-going provision of corvid spikes to avoid predation. Presence/ absence surveys and adult counts of ponds N1, N3 and N5.	April – July (ideally in damp conditions shortly after rainfall after daylight hours)	Ponds N1, N3 and N5 will be visited by a suitably experienced ecologist each monitoring year to complete a habitat appraisal. Continue with monitoring and surveillance exercises using established methodology.	Mitigation is considered effective if waterbody conditions are suitable for use by natterjack toads and natterjack toads are found to be using them.	Should the construction phase interventions not result in increased population abundance and distribution, further discussions would be held with Natural England and agreement sought on the further appropriate measures to be implemented. This could include further habitat enhancement and/or translocation of spawn to alternative ponds to kick-start recruitment (where appropriate according to good practice, e.g. JNCC/ IUCN guidelines).	PSL (TBC)

4.5 Bats

4.5.1 The EDF Energy estate supports maternity colonies of barbastelle, Natterer's bat, brown long-eared bat and soprano pipistrelle; non-breeding roosts of the breeding species and also noctule and common pipistrelle; and hibernation roosts for the majority of these species. The main development site boundary and zone of influence consists of a mosaic of habitats used by commuting and foraging bats. Therefore, monitoring is identified for the following:

- Roosts in trees and buildings;
- Bat boxes;
- Bat barn;
- Commuting routes; and
- General bat activity, including foraging.

4.5.2 To inform the monitoring assessments, a range of survey approaches are proposed. These include Advanced Level Bat Survey Technique (ALBST) monitoring (trapping and radio tracking), targeted to maternity bat populations (barbastelle and Natterer's bat) to confirm continued use of the area affected by the project by these bats, and to determine continued use of roosts and foraging areas and home ranges. ALBST is considered the best method to determine any change to the ecological baseline during the construction phase. The baseline from which this will be assessed will be supplemented by ALBST in 2022 and will be used to confirm that the favourable conservation status (FCS) of the monitored bat populations has been maintained.

4.5.3 Currently, the FCS 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 (Ref. 1)).

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

- 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?

- 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?
- 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 barbastelle and Natterer's bats changed or been reduced, despite implementation of mitigation?
- Has the area of compensatory habitat developed sufficiently to provide sufficient foraging habitat for the species concerned in the long term?
- To what extent have are roost mitigation features being used by the species concerned?

4.5.5 The monitoring approaches for bats in this TEMMP (Table 4.4) are designed to provide the data necessary to answer these questions.

4.5.6 **Appendix 1** provides additional details of the proposed monitoring locations for the different monitoring approached proposed. These locations will be reviewed and updated in the final versions of relevant protected species licences agreed with Natural England (in prep).

a) Roosts

4.5.7 Monitoring will be undertaken for roosts in trees and roosts in buildings. The roosts that will be subject to monitoring will be agreed with Natural England as appropriate.

i. Roosts in Trees (subject to tree removal)

4.5.8 Any bat roosts which will be lost as a result of tree removal will be monitored in advance and in accordance with the relevant protected species licences as agreed with Natural England. The monitoring will inform the need for bat boxes and other mitigation associated with the tree removal. These roosts are not considered further below.

ii. Roosts in Trees (retained)

4.5.9 Bat roosts and roost resources in woodland areas which have been assessed as being sensitive to disturbance from noise will be monitored throughout the construction of Sizewell C. Further details are provided in **Table 4.4**.

iii. Roosts in buildings

4.5.10 Bat roosts in buildings which are being retained but have been assessed as being sensitive to disturbance will be monitored throughout the construction of Sizewell C. Further details are provided in **Table 4.4**.

iv. Bat Boxes

4.5.11 Bat boxes in retained woodland areas will be monitored on an annual basis during the construction phase of Sizewell C from one year after installation. Boxes will continue to be monitored for five-years beyond the completion of construction. This monitoring will clarify the presence/absence of bats and the use of the bat boxes. Further details are provided in **Table 4.4**.

v. Bat Barn

4.5.12 Monitoring of the new bat barn at Lower Abbey Farm will take place on an annual basis during the construction phase from one year after installation and will continue for five-years beyond the completion of construction. Further details are provided in **Table 4.4**.

b) Commuting Routes

4.5.13 A number of corridors are being retained during construction within the main development site to provide connectivity for bats, including Bridleway 19, to the east of Upper Abbey Farm, the trees along the northern edge of the Kenton Hills track and through the SSSI crossing. A corridor will also be created using semi-mature trees to link the Kenton Hills area to Ash Wood through the temporary construction area. Each of these corridors will be subject to monitoring to determine the extent of usage during construction. Further details are provided in **Table 4.4**.

c) Bat activity across the site, particularly foraging

4.5.14 Monitoring will also be undertaken of general bat activity, particularly foraging. This will focus on retained habitats adjacent to the main development site and the various habitat creation areas that have been or will be established. Further details are provided in **Table 4.4**. In this table the assumed Sizewell C construction period aligns with Years 1-12 and the operational period commences in Year 13.

Table 4.4: Bat Monitoring (Construction and Operation)

Year	Monitoring Survey	Timing	Description	Target & Effectiveness measures	Potential interventions	Securing mechanism
Roosts in Trees & Buildings (in areas sensitive to disturbance)						
Construction Y1 to Y12 (inclusive)	Known roosts and wider roost resources will be monitored to ensure that any unforeseen impacts can be captured. Areas which have been assessed as being sensitive to disturbance from noise / light will be monitored throughout the various phases of the Sizewell C Project, with monitoring surveys being carried out annually. The monitoring survey works will assess the noise levels produced by the works at known roost site locations and the ongoing usage of roosts compared to baseline surveys Lighting assessments will be conducted during the bat surveys (particularly activity surveys). Hand-held light detectors will monitor the light levels	Annually in the correct season for each roost type. I.e. Check for maternity roosts in peak maternity season, check of status of other roosts throughout the active season. Annual check of hibernation roosts in winter.	Usage of roosts and roost resources (to account for roost switching) will be compared to the baseline status, where significant changes to the baseline status are identified interventions will be conducted. Monitoring locations will include: - Roosts in trees along the northern edge of Kenton Hills and Nursery Covert - Roosts in the buildings at Upper Abbey Farm - Roosts in trees within Ash Wood - Roosts in trees within Fiscal Policy - 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.	Success criteria will be: - Roosts continue to be utilized with no significant changes in use (number of bats or roost type) - High frequency noise levels at or below those predicted within the noise modelling. - Light levels controlled within 'Dark' limits.	If roosts are found to be being utilized in a substantially different way, the following interventions are proposed: • mitigation focused on the bat population, which could include further roost provision. If necessary, this is the appropriate juncture at which the requirement for an EPS derogation license may be triggered • Potential interventions, should it be assessed that it is the commuting routes to the roosts for bats which are impacted is presented below. If high frequency noise is found to be having a material effect on roost usage, the following approaches will be implemented: • Implementation of noise abatement measures, which could include working methodologies, additional noise attenuation fencing or bunds. If lighting levels are found to be having a material effect on roost usage lighting will be modified to	Requirement 4

Year	Monitoring Survey	Timing	Description	Target & Effectiveness measures	Potential interventions	Securing mechanism
	in key locations and allow for proactive response where required.		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 areas a level of 0.1 lux is proposed). 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.		reduce this through relocation, baffles or screening as appropriate.	
Construction Y1 to Y12 (inclusive) [Radio Tracking specification]	Comparison of species assemblage (1) and breeding status (2) through bat trapping surveys. Radio tracking of maternity populations of barbastelle and Natterer's bats to determine activity patterns, roost location and home ranges in response to construction	May – September pre construction, year 1, 3, 5, 8 and 12 post construction commencement	Trapping locations to be established in key areas within the Sizewell estate and off site (where appropriate/agreed) where known populations of these species occur. Sample of bats to be selected (approx. 10-20% of estimated population) for radio tracking over two sessions each monitoring year in June and August.	Presence of the same bats species and breeding status in trapping areas Home ranges areas and spans not significantly different to pre-construction areas. Roost locations within compensation/retained areas.	As above	As above

Year	Monitoring Survey	Timing	Description	Target & Effectiveness measures	Potential interventions	Securing mechanism
Operation Y13 – Y23	Monitoring of roosts will continue every two years to monitor the ongoing usage of roosts as relevant Operational noise monitoring is not proposed The methods applied during the construction in Y1-Y12 would be designed to be future proofed for use in Y13-23 to ensure comparable data is collected over the duration of the construction and operational monitoring phases.	Every two years in the correct season for each roost type. I.e. Check for maternity roosts in peak maternity season, check of status of other roosts throughout the active season. Annual check of hibernation roosts in winter.	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.	Success will be determined by the retention of known roosts over the operational phase.	In the event of mitigation not being successful, additional mitigation measures would be explored and implemented as appropriate. Additional mitigation measures which could be implemented during the operational phase include additional landscape planting to form broader bat corridors or buffers to existing woodlands for bats. The **oLEMP** provides scope to amend the balance between woodland / scrub planting and acid grassland provision to provide greater connectivity or woodland extensions for bats if this is deemed appropriate.	Requirement 4
Bat Boxes and Bat Barn						
Y1 to Y12 (inclusive)	Bat boxes and the bat barn will be monitored on an annual basis during the construction phase. The surveys will be to confirm presence/ absence and the species assemblage present.	Annually in September	All monitoring 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 (*Nycteribiid*) pupae. Locations will include:	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 a bat box not being occupied within three years of installation, consideration will be given to moving the box to an alternative site nearby, to be determined by a licensed bat ecologist and in agreement with the Ecology Working Group. The box will be moved to an alternative suitable location if it is considered likely that conditions in the location	PSL (TBC) Requirement 4

Year	Monitoring Survey	Timing	Description	Target & Effectiveness measures	Potential interventions	Securing mechanism
			- Sites where roosts are known to be present, e.g., Natterers roost identified in 2020 (>40 bats in each box) - Monitoring of bat boxes erected for barbastelle already (45 boxes distributed already around the site). Any newly installed bat boxes to mitigation any further identified roost loss in trees. Temperature and humidity data loggers will be placed inside the bat barn to measure the environmental conditions match those within the structures where roosts have previously been identified.		have changed and this has impacted the suitability for bats. If the locations are still considered suitable, in agreement with the Ecology Working Group, the boxes may be left in situ. It may be that the roosting opportunities have not been found by the bats or that in that particular location roost sites are not a limiting requirement. 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.	
Y13 – Y18 (i.e. first 5 years of Operation)	Bat boxes and the bat barn will continue to be monitored for five-years beyond the completion of construction. The surveys will be to confirm presence/ absence and the species assemblage present.	Annually in September (optimal time)	Monitoring will consist of a check of the feature for evidence of use, such as droppings, smoothing, feeding remains, smell, staining and bat fly (*Nycteribiid*) pupae.	Success criteria will be the occupation by bats and whether the number of bats present increases or remains consistent during the operational phase.	Any remedial measures will be addressed during the construction period (Y1-Y12)	PSL (TBC) Requirement 4
Commuting Routes and Home Ranges						

Year	Monitoring Survey	Timing	Description	Target & Effectiveness measures	Potential interventions	Securing mechanism
Y1 to Y12 (inclusive)	Key commuting routes will be monitoring across the site using a combination of static detectors and for landscape scale context, radio tracking. One static detector position is proposed per commuting route and a control site (matched with pre construction locations), The monitoring will assess the ongoing usage of bats of existing commuting routes/ key landscape features compared to the base line surveys and simultaneous control locations. Areas which have been assessed as being sensitive to disturbance from noise / light will be monitored throughout the various phases of the Sizewell C Project, with monitoring surveys being carried out annually. The monitoring survey works will assess the	Annually in May, June, July, August and September.	Locations to be monitored for key commuting routes includes: - Bridleway 19 east of Upper Abbey Farm - Fiscal Policy - Black Walks - Northern edge of Kenton Hills - Eastern boundary of Goose Hill - The Grove - The SSSI Crossing - The 'new' commuting route between Kenton Hills and Ash Wood. Species using the routes will be assessed, as will the overall level of activity (overall and for each species, particularly barbastelle and Natterers bat). This will be compared with pre-construction levels. The change will be assessed holistically (it is foreseen that some routes will likely increase in usage overall and others will reduce). Noise monitoring will be undertaken during the construction phase, including an assessment of high frequency noise. This will be compared to foreseen levels and should any discrepancies be encountered	Success of existing mitigation measures will be determined through the ongoing use of commuting routes over the course of the construction phase, at similar levels to those recorded during baseline monitoring (assessed holistically).	Should it be found that certain routes are not being used or overall there is substantial reduction in the permeability of the site to bats, a number of interventions are possible. - Additional planting can be utilized to enhance the connectivity of routes; - Movable potted vegetation can be used to reduce the gaps in the vegetation during construction. If high frequency noise is found to be having a material effect on commuting routes, noise abatement measures will be deployed, which could include working methodologies, additional noise attenuation fencing or bunds. If lighting levels are found to be having a material effect on commuting routes, lighting will be modified to reduce this through relocation, baffles or screening as appropriate.	Requirement 4

Year	Monitoring Survey	Timing	Description	Target & Effectiveness measures	Potential interventions	Securing mechanism
	high frequency noise levels produced by the works at known commuting routes. Lighting assessments will be conducted during the bat surveys. Hand-held light detectors will monitor the light levels in key locations and allow for proactive response where required.		then remediation actions would be undertaken as appropriate. 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).			
Y13 – Y18 (i.e. first 5 years of Operation)	Monitoring of commuting routes will continue on an annual basis to monitor the ongoing usage of these routes, using static detectors. The survey methods applied during the construction in Y1-Y12 would be designed to be future proofed for use in Y13-18 to ensure comparable data is collected over the duration of the construction and operational phases.	Annually in May, June, July, August and September.	The above locations would be monitored using the same approach as during construction (static detectors). One static detector position is proposed per commuting route (matched with pre construction locations), with activity transects to cover all routes identified monthly).	Success of mitigation measures will be determined through the ongoing use of commuting routes, at similar levels to those recorded during baseline monitoring (assessed holistically).	Success of existing mitigation measures into the operational phase will be determined through the use of commuting routes over the course of the construction phase being maintained into the operational phase and at similar (or greater) levels to those recorded during baseline monitoring. Additional mitigation measures which could be implemented during the operational phase include additional landscape planting to form broader bat corridors for bats. The **oLEMP** provides scope to amend the balance between woodland / scrub planting and acid grassland provision to	Requirement 4 oLEMP secured under Requirement 14

Year	Monitoring Survey	Timing	Description	Target & Effectiveness measures	Potential interventions	Securing mechanism
					provide greater connectivity for bats if this is deemed appropriate.	
Bat Activity Across the Site (foraging)						
Y1 to Y12 (inclusive)	As with the bat commuting routes, general bat activity, particularly foraging will be monitored across the main development site including the proposed mitigation areas. Monitoring surveys will continue across the main development as undertaken for the baseline surveys, using a combination of static monitoring and radio tracking throughout the various phases of the proposed development. Static positions will match those conducted to inform the baseline in the year prior to construction commencing. Areas which have been assessed as being sensitive to disturbance	Annually in May, June, July, August and September.	Static detector locations and to be surveyed will be as per the pre-construction locations as shown in Figure 1 of the **2020 Bat Static Monitoring Survey Report** (Doc Ref. 6.13 (A) [AS-037]), to include static positions: • MS01 • MS9 • MS14 • MS10 • MS7 • MS15 • MS12 • MS22 • MS18 • MS19 • MS20 • MS25 • MS26 • MS28 • MS31 • MS27 • MS29 • MS30 • MS33 • MS34 • MS35 • MS36	Success of existing mitigation measures will be determined through the ongoing use of foraging areas over the course of the relevant phase, at similar levels to those recorded during baseline monitoring, albeit with some displacement or increased use expected towards areas of new habitat creation, such as Aldhurst Farm.	Should it be found that certain areas are not being used by bats or overall there is significant reduction in the permeability of the site to bats, a number of interventions are possible. - Additional planting can be utilized to enhance the connectivity of routes; - Movable potted vegetation can be used to reduce the gaps in the vegetation during construction. If high frequency noise is found to be having a material effect on foraging activity, noise abatement measures will be deployed, which could include working methodologies, additional noise attenuation fencing or bunds. If lighting levels are found to be having a material effect on foraging activity, lighting will be modified to reduce this through relocation, baffles or screening as appropriate.	Requirement 4

Year	Monitoring Survey	Timing	Description	Target & Effectiveness measures	Potential interventions	Securing mechanism
	from noise / light will be monitored throughout the various phases of the Sizewell C Project, with monitoring surveys being carried out annually. The monitoring survey works will assess the high frequency noise levels produced by the works at known commuting routes. Lighting assessments will be conducted during the bat surveys. Hand-held light detectors will monitor the light levels in key locations and allow for proactive response where required.		• Aldhurst Farm • Lover's Lane Entrance • The Grove • South of Great Mount Wood Locations will be varied and updated as relevant in discussion with the Environment Review Group			
Y13 – Y18 (i.e. first 5 years of Operation)	As with the bat commuting routes, general bat activity will be monitored across the main development site during the operational phase which will include the proposed mitigation areas. Monitoring will be through the use of static bat detectors.	Annually in May, June, July, August and September.	General bat activity will be monitored across the main development site during the operational phase which will include the proposed mitigation areas.	In the operational phase, use of habitats across the temporary construction area once these are established in accordance with the **oLEMP** [REP1-010] will be an indication of success. Overall activity levels should be comparable to pre-commencement levels.	Additional mitigation measures which could be implemented during the operational phase include additional landscape planting to form broader bat corridors for bats. The **oLEMP** [REP1-010] provides scope to amend the balance between woodland / scrub planting and acid grassland provision to provide greater connectivity for bats if this is deemed appropriate.	**oLEMP** [REP1-010] secured under Requirement 14

Year	Monitoring Survey	Timing	Description	Target & Effectiveness measures	Potential interventions	Securing mechanism
	Monitoring surveys will continue across the main development site as undertaken for the baseline surveys, using a combination of static monitoring and radio tracking throughout the various phases of the proposed development.					

*The operational monitoring requirements will be finessed / confirmed during the later stages of the construction phase depending on the finding and success of mitigation implemented.

4.6 Reptiles

4.6.1 Both the wider EDF Energy estate and the main development site support populations of the four common reptiles species (grass snake, adder, slow worm and common lizard). An updated survey for 2020 and revised population estimates were presented in **Reptile Survey Report 2020** [AS-036]

4.6.2 The construction of Sizewell C within the main development site requires that a reptile translocation from areas which support these species to newly established habitats which will provide receptor sites. The receptor sites include the Studio Fields Complex (Studio Half Way, Lovers, Land West of Studio), the grassland areas at Aldhurst Farm, the Kenton Hills reptile receptor area and Great Mount Walk. The approach to habitat creation in the receptor areas and to translocation are outlined in the **Reptile Mitigation Strategy** [APP-252]. Updated assessments of reptile population numbers and how these influence the strategy were included in **Reptile Survey Report 2020** [AS-036].

4.6.3 The final version of the Reptile Mitigation Strategy (in preparation) will determine, on the basis of habitat condition, prey availability and baseline populations, which receptor sites are prioritized to support the translocation programme.

4.6.4 The following monitoring measures presented in **Table 4.5** have been identified to monitor the effectiveness of the mitigation measures to be implemented which includes the translocation of reptiles.

Table 4.5: Reptile Monitoring (Construction and Operation)

Year	Monitoring Survey	Timing	Description	Target & Effectiveness measures	Potential interventions	Securing mechanism
Y1 to Y12	A regular monitoring programme will be implemented to ensure receptor site habitats develop in a way suitable for the reptiles translocated into them, and that translocated reptiles are established successfully in these locations. Monitoring will include: - Visual assessments of habitat condition within the receptor sites. - Surveys of the receptor sites to determine population densities and species assemblages present.	Two survey periods annually: in May / June and again in September	The proposed receptor sites to be monitored will include: - Kenton Hills; - Great Mount Walk; - St James' Covert; - Broom Covert; - Studio Fields Complex (Studio Half Way, Lovers, Land West of Studio); - Aldhurst Farm; Surveys will monitor abundance and range/distribution of reptiles. Proposed survey effort based recommended methods for presence/absence surveys within Natural England Technical Information Note TIN102 Reptile mitigation guidelines. Surveys will identify and map the location of key habitat features within receptor sites (i.e. adder hibernaculum and grass snake egg laying sites).	Implement Broad Management Actions as defined within the Reptile Mitigation Strategy. Achieve and maintain presence of 4 reptile species at Kenton Hills, Great Mount Walk, St James' Covert, Broom Covert and the Studio Fields Complex. Achieve and maintain presence of 3 reptile species at Aldhurst Farm. Achieve and maintain range of age class' (i.e. neonate, juvenile, subadult, adult). The habitat areas within the receptor sites being managed effectively and habitat conditions remaining suitable for reptiles as per the target condition and measured by HAS.	Habitat Suitability Assessment to identify where habitat management is required to maintain target. If mitigation and / or management measures are found to be unsuccessful, a review of the HAS along with the habitat management of the relevant receptor sites will be undertaken. The review will also seek to identify species specific threats, the risks of incidental capture and killing, and the activities that give rise to them. Further mitigation measures may include the need for additional habitat provision (such as hibernacula and brash piles) and / or a modification of habitat management methods. Ensure personnel involved in the surveying, management and conservation of reptiles are adequately trained and invested in the conservation targets. Reinstatement of habitat following fire, acute pollution or other major damage.	Requirement 4
Y13 to Y17	As above	Two survey periods annually: in May / June and again in September				Requirement 4

4.7 Terrestrial Mammals

4.7.1 The construction of Sizewell C is considered to have the potential to impact badger, otter and water vole through a variety of impacts including direct land take resulting in habitat loss and habitat fragmentation.

4.7.2 The following subsections detail the monitoring measures for badger, otter and water vole at the main development site with **Table 4.6** setting out the monitoring requirements.

a) Badger

4.7.3 Badgers are present within the EDF Energy estate and surveys undertaken in 2020 (**Volume 3, Chapter 2, Appendix 2.9.A.1** of the **ES Addendum** [AS-207] confirm the ongoing presence of two badger social groups present. The establishment of the temporary construction area is likely to require the closure of two main setts and the creation of replacement artificial setts. A draft **Badger Mitigation Strategy** was appended to the **ES** (**Volume 2, Chapter 14, Annex 14.C3A** [APP-246]) and the approach set out in that strategy will be followed through the badger licence process in discussion with Natural England (Doc Ref. 6.3 14C3B(A)).

4.7.4 The setts that are to be subject to monitoring will be defined in the final version of the Badger Mitigation Strategy and agreed with Natural England as appropriate in agreeing the relevant protected species licence.

4.7.5 Monitoring will focus upon any retained existing setts, any newly created setts as well as the new artificial setts. Closed setts will also be monitored during the construction phase to ensure badgers to not dig back into them. Monitoring commitments during the construction and operational phase are detailed in **Table 4.6** below.

b) Otter

4.7.6 Otters are present within the EDF Energy estate and surveys undertaken in 2020 (**Volume 3, Chapter 2, Appendix 2.9.A.2** of the **ES Addendum** [AS-208]) confirm the use by otters of both the Leiston and Sizewell drains within the main development site. The establishment of the temporary construction area will require the diversion of the Sizewell drain and the SSSI crossing being built over the Leiston drain. An otter holt was detected in 2020 along the Sizewell Drain and is likely to require closure. An artificial holt may need to be provided and this will be determined during surveys in 2021.

4.7.7 A non-licensable method statement (included as **Volume 2, Appendix 14C10** of the **ES** [APP-252] and submitted to Natural England in July 2021

(Doc Ref. 6.3 14C10(A)) for otters provides details to be followed if otters are unexpectedly detected within the active construction site. Further details are provided in **Table 4.6** below.

c) Water Vole

4.7.8 Water voles are present within the EDF Energy estate and surveys undertaken in 2020 (**Volume 3, Chapter 2, Appendix 2.9.A.2** of the **ES** addendum [AS-208] confirmed the presence of low populations of water voles in both the Leiston and Sizewell drains within the main development site. The establishment of the temporary construction area will require the diversion of the Sizewell drain and the SSSI crossing being built over the Leiston drain. Water voles will need to be displaced and excluded from these construction areas and a translocation may be required. A draft **Water Vole Strategy** (**Volume 2, Chapter 14, Appendix 14C6A** [APP-252] was appended to the **ES** and a draft of the mitigation programme is provided as **Appendix 3** of this document.

4.7.9 The areas that are to be subject to monitoring will be defined in the final version of the Water Vole Mitigation Strategy and agreed with Natural England as appropriate in agreeing the relevant protected species licence.

4.7.10 A monitoring programme will be required, and further details are provided in **Table 4.6**.

Table 4.6: Terrestrial Mammal Monitoring (Construction and Operation)

Year	Monitoring Survey	Timing	Description	Target & Effectiveness measures	Potential interventions	Securing mechanism
Badger						
Y1 to Y12	Monitoring of retained setts, artificial setts and wider surveys to confirm the locations of any new setts which may become established. Monthly checks will be carried out by ECoW of the closed sett locations where these are within the fenced boundary of the temporary construction area until they are removed.	Monthly monitoring of closed setts throughout the construction phase until they are removed. Badger activity, artificial setts and retained setts to be monitored annually.	Closed setts will be visited on a monthly basis before they are removed to observe any signs of attempted badger re-entry. The following setts would be monitored • Newly created Artificial Setts (locations TBC) • Existing / retained setts in Ash Wood and Reckham Pitts Wood. • Any retained or new setts within 100m of construction. Monitoring works would comprise visiting the retained and artificial setts and updating their status and classification. Badger surveys will be undertaken on the construction site + 100m to identify badger field signs and any new setts following suitable survey guidance. Further monitoring requirements may be identified during the construction phase and therefore the monitoring activities are not limited to those detailed above.	The target is to maintain the success of the social groups recorded in the area. Success criteria are as follows: • No badgers re-enter closed setts within the temporary construction area. • Artificial badger setts are used by badgers and sett exclusion works are successful with badgers not moving back into setts that are impacted by the works. • Badger activity across wider EDF Energy estate is maintained and badgers continue to successfully breed. • Existing badger setts outside of the development footprint remain in use. • No badger Road Traffic Accidents (RTAs) within the temporary construction area	As per the **CoCP**, if a badger or possible evidence of badgers (e.g. possible excavations) is found within the active construction site, the ECoW should be contacted as soon as possible to advise on the appropriate course of action. E.g., license required to close additional newly created setts. Check fencing if badger activity or RTAs recorded within the construction area and repair any gaps.	Badger Licence **CoCP** secured under Requirement 2
Y13 to Y17	Annual monitoring of the badger setts during the operational phase and inspections of any badger proof fencing to be carried	Annually for the 5 yr aftercare period.		• Badger activity across wider EDF Energy estate is maintained, and badgers continue to successfully breed.		Requirement 4

	as part of maintenance inspections. Monitoring will be carried out of the artificial badger setts and other confirmed sett locations to confirm ongoing use.			• Badger foraging activity resumes across the reinstated habitats within the temporary construction area. • No badger RTAs on the operational access road		
Water Vole						
Y1 to Y12 (inclusive)	Monitoring surveys of water courses and ditches affected by the construction phase activities as well as mitigation areas and any receptor site that is used. Monitoring will be undertaken along the realigned Sizewell Drain and Leiston Drain within the main development Site. Monitoring is not proposed for areas in which exclusion and translocation may be required other than any updated baseline survey associated with that approach. At the time of writing, displacement is believed to the be appropriate method and translocation works are not anticipated. Habitat condition assessments will also be	l Annual monitoring during construction Monitoring surveys will be carried out during the breeding season (March to October).	Locations for monitoring will include the Sizewell Drain and Leiston Drain within the main development site (and immediately adjacent ditch areas). Monitoring will be undertaken of the Aldhurst Farm wetlands if this area is used as a water vole receptor site. The new wetlands to be created at the north eastern extent of the site will also be monitored to determine (any) colonization success. Brief description of survey approach: • 2 survey visits to be undertaken each monitoring year, visit 1 between mid-April to end of June and Visit 2 between July and September (inclusive), and	The target is to maintain populations of water vole in retained and adjacent areas to construction, increase the population in Aldhurst Farm and recruit water vole into created wetland in the north-east of the site. Success criteria confirming the effectiveness of mitigation would include: • a stable water vole population across the main development site within the existing waterbodies not directly impacted by the works. • the natural colonization of the re-established Sizewell Drain and recolonization of the Leiston Drain (where initially subject to displacement or any translocation) over the course of the construction phase and continued through the operational phase. • The successful translocation (if required) of water voles to the Aldhurst Farm receptor site	In the event of the mitigation measures in place not being successful, as determined by survey results, these will be subject to review on site and further measures to be implemented to be discussed and agreed through the Environment Review Group Such measures could result in changes to the management approaches and methods such as review habitat quality and water level management. **Note:** In the event that the Aldhurst Farm wetlands are not required to support a water vole translocation exercise, an exclusion fence present around the western lagoon will be removed as soon as	PSL Requirement 4

	required of the water vole receptor area at Aldhurst Farm if that is used to receive translocated animals. Surveys will consider population densities which will be compared against baseline survey data and used to understand the effectiveness of the mitigation implemented. Monitoring for mink will be undertaken to inform the need for any control measures to be implemented across the estate.		field signs recorded as per appropriate guidance. • Given the conditions on site, the use of floating platforms is recommended to aid survey efforts. • Mink platforms will be deployed in the Leiston Drain within the main development site and Aldhurst Farm. Monitoring using camera traps and potentially sand trays (for footprints) will be used at the location of the SSSI crossing to determine usage of the SSSI crossing by water voles. In the event that no movements through the SSSI crossing are detected, and subject to agreement by the Environment Review Group, consideration will be given to long-term monitoring of the DNA of water vole populations either side of the crossing to determine the consequences of any population fragmentation. Monitoring using camera traps and potentially sand trays (for footprints) will be used at the location of the Lovers Lane culvert to determine usage of the new culvert by water voles.	• Suitable habitats for water voles become re-established (Sizewell drain, Leiston Drain), established or remain suitable and continue to be appropriately managed. • No fragmentation of water vole populations at the location of the SSSI crossing.	possible after works commencing in order to make this basin available for natural colonization.	
Y13 to Y17 (inclusive)	Monitoring surveys of water courses and ditches affected by the construction phase activities as well as mitigation areas and any receptor site that is used. Surveys will consider population densities, which will be compared against baseline survey data, as well as that collected during the construction phase and used to understand the effectiveness of the mitigation implemented.	Every two years; commencing in Y13 and also being carried out in Y15 and Y17.				Requirement 4

	Monitoring for mink will be maintained to inform the need for any control measures to be implemented across the estate.					
Otter						
Y1 to Y12 (inclusive) Y13 to Y17 (inclusive)	Monitoring surveys across the site targeting locations where otters have been confirmed as present during baseline surveys will continue during the construction phase to assess the effectiveness of the mitigation measures being implemented and to monitoring the distribution of otters across the site. Monitoring will also be carried out of the artificial otter holt(s) to be created.	Annually Y13, Y15 and Y17	Any artificial holts created would be monitored during the construction phase. Known holt and couch locations at the north eastern extent of the site, on the boundary between the marsh harrier habitat creation area and the Minsmere South Levels would be monitored during the construction phase. Monitoring would comprise the searching of habitats along watercourse edges for spraint signs as well as the setting of motion sensitive cameras. Monitoring of the SSSI crossing point to confirm the effectiveness of the mitigation and permeability of the scheme design. Monitoring using camera traps will be used at the location of the SSSI crossing and the Lovers Lane culvert to determine usage of the SSSI	As set out in the Natural England licence Success criteria confirming the effectiveness of mitigation would include: • In the construction phase, a stable otter population across the wider EDF Energy estate and adjacent areas, within the existing waterbodies not directly impacted by the works. • In the operational phase a stable otter population across the wider EDF Energy estate and adjacent areas and the re-use of those water bodies within the main development site which have been modified by the works • No fragmentation of otter populations at the location of the SSSI crossing and the confirmed use of the Lover's Lane culvert. • any artificial holt(s) provided becomes occupied by otters	In the event of the mitigation measures in place not being successful, as determined by survey results, these will be subject to review and further measures to be implemented to be discussed and agreed through the Environment Review Group Such measures could result in changes to the management approaches and method.	PSL Requirement 4

			crossing and the new culvert by otters.			

*The operational monitoring requirements will be confirmed during the construction phase depending on the finding and success of mitigation implemented.

5. Associated Development Sites

5.1.1 As set out in **Section 1.1**, a series of off-site associated development are required in the local area for the construction of the Sizewell C nuclear power station. These are required to facilitate the construction works at the main development site and would be brought forward in the early stages of construction. A number of these sites would be re-instated to their existing condition upon completion of construction of the Sizewell C Project.

5.1.2 This section identifies the general and site-specific monitoring measures to be applied at the associated development sites (as relevant) during construction and operation.

5.1 General

5.1.1 A series of general requirements have been identified to be required at all of the associated development sites during construction (and removal and reinstatement where relevant) and operation. In addition to those referenced within **Section 1.4** of this plan, the following measures relate to the associated development sites:

- There will be regular checks of construction lighting to monitor and correct for any light spill that could lead to adverse impacts on the surrounding habitats and particularly into the adjacent hedgerows and habitats.
- There will be regular checks during construction to ensure that badger are excluded from the site.
- There will be regular checks of tree and hedgerow protection fencing to ensure the root protection buffer is maintained during construction works.
- There will be regular checks of operational lighting to monitor and correct for any excessive light spill into the surrounding habitats and particularly into the hedgerows.

5.2 Designated Sites

a) All Associated Development Sites

5.2.2 No monitoring measures have yet been defined for designated sites at the associated development sites. Monitoring requirements will be included within this section if they are determined to be required.

5.3 Great Crested Newt

5.3.1 Great crested newt is present in the vicinity of the northern park and ride, Sizewell link road and green rail route as identified in the relevant terrestrial ecology and ornithology assessments [APP-363, APP-461, APP-555, AS-182, AS-184 and AS-188]. Monitoring measures at these associated development sites are detailed in the sub sections below.

5.3.2 All sites have the potential to impact great crested newt through:

- Habitat loss.
- Habitat fragmentation (including connectivity).
- Incidental mortality.

5.3.3 The locations that are to be subject to monitoring will be agreed with Natural England as appropriate within the relevant protected species licences (in prep). Licenses will be required for each site as relevant.

5.3.4 Mitigation ponds are proposed to compensate for the loss of great crested newt breeding ponds at Sizewell link road. The locations that are to be subject to monitoring will be defined in the final version of the Great Crested Newt Mitigation Strategy and agreed with Natural England as appropriate within the relevant protected species licence.

5.3.5 The approaches detailed in **Table 5.1** below, may be subject to change given that District Licensing is available to the project and that monitoring may not be required. All of which will be subject to agreement with Natural England.

Table 5.1: Great crested newt Monitoring on Associated Development sites (Construction and Operation)

Year	Monitoring Survey	Timing	Description	Target and Effectiveness Measure	Potential interventions	Securing mechanism
Y1 to Y3 (inclusive)	Monitoring of ponds within an agreed distance of the redline boundary which are to be retained and not directly impacted to ensure that populations remain viable. Distances are to be agreed with Natural England. In order to rationalize ponds to be surveyed within the agreed buffer, eDNA water sampling will be used Where presence is confirmed to ensure that the local population has not been detrimentally affected by the developments, population density assessments will be undertaken. Monitoring of newly created ponds including the undertaking of a habitat suitability index assessment to ensure that the conditions present remain suitable.	Monitoring in April, May and early June in Y1, and Y3	Surveys of waterbodies will follow best practice measures using a combination of torchlight surveys, egg searches and where practicable bottle trapping and netting. Prior to any targeted surveys taking place, eDNA water sampling will be undertaken to rationalize the number of ponds being monitored.	As detailed in the draft Natural England Licence. The effectiveness of the mitigation will be determined by the following: - the uptake of new ponds by great crested newts, - that the current population densities locally present do not decline as a result of the proposed developments. - The habitat conditions within the newly created waterbodies are suitable for great crested newts (measures by Habitat Suitability Index assessment). The trigger for remedial action would be a failure for the new ponds to support great crested newts with a consequent decline in population densities.	In the event of population decline and the effectiveness of the mitigation being reduced, the mitigation measures and management approaches will be reviewed, and discussions will be carried out with Natural England on appropriate remedial actions. If needed, additional mitigation will be implemented.	PSL
Y4 to Y8 (inclusive) for Sizewell Link Road Y4 to Y12 (inclusive) for Northern Park and Ride and Green Rail route.		Monitoring in April, May and early June in Y5, and Y7				PSL (TBC)

5.4 Bats

a) All Associated Development Sites

5.4.2 The associated developments have the potential to impact bats through:

- Land take (habitat loss) and fragmentation.
- Disturbance from noise and light.
- Incidental mortality of individuals.

5.4.3 Non-licensable method statements have been prepared for the following associated development sites:

- Northern park and ride (included as **Volume 3, Appendix 7A.6A** of the **ES** [APP-364]).
- Southern park and ride (included as **Volume 4, Appendix 7A.5A** of the **ES** [APP-395]).
- Two Village Bypass (included as **Volume 5, Appendix 7A.6A** of the **ES** [APP-426]).
- Sizewell Link Road (included as **Volume 6, Appendix 7A.6A** of the **ES** [APP-462]).
- Freight management facility (included as **Volume 8, Appendix 7A.4A** of the **ES** [APP-524]).

5.4.4 These non-licensable method statements provide details to be followed if bats are unexpectedly detected within the active construction sites.

5.4.5 If circumstances on site change and roosting bats are confirmed present in features which are to be directly impacted by the works, a Natural England development licence will be required, and all working methods and monitoring will be subject to agreement with Natural England.

5.4.6 Two of the Associated Development sites, the two village bypass and Sizewell link road, will be subject to crossing point surveys where key commuting routes, which will be severed by the scheme corridors, will be subject to targeted monitoring. Further details on the crossing point surveys have been presented in **Table 5.2** below.

Table 5-2: Bat Monitoring on Associated Development sites (Construction and Operation)

Year	Monitoring Survey	Timing	Description	Target & Effectiveness measures	Potential interventions	Securing mechanism
Retained Roosts in Trees (should any be found during pre-works surveys)						
Construction Y1 to Y3 (inclusive)	Known roosts will be monitored to ensure that any unforeseen impacts can be captured. [For Sizewell Link Road, see also Table 4.4 for the Main Development Site, given potential for usage by shared bat population]	Annually in the correct season for each roost type. I.e. Check for maternity roosts in peak maternity season, check of status of other roosts throughout the active season. Annual check of hibernation roosts in winter.	Usage of roosts will be compared to the baseline status, where significant changes to the baseline status are identified interventions will be conducted.	Success criteria will be: - Roosts continue to be utilized with no significant changes in use (number of bats or roost type)	If roosts are found to be being utilized in a significantly different way, the following intervention is proposed: • further roost provision. (this is the appropriate juncture at which the requirement for an EPS derogation license may be triggered) .	Requirement 4
Operation Y4 to Y8 (inclusive)	Monitoring of roosts will continue twice a year to monitor the ongoing usage of roosts as relevant Operational noise monitoring is not proposed The methods applied during the construction would be designed to be future proofed in Y4 - 8to ensure comparable data is collected over the duration of the construction and operational monitoring phases.	Twice a year in the correct season for each roost type. I.e. Check for maternity roosts in peak maternity season, check of status of other roosts throughout the active season. Annual check of hibernation roosts in winter.	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.	Success will be determined by the retention of known roosts over the operational phase.	In the event of further roost provision not being successful, additional mitigation measures would include provision of roosts in alternative locations and implemented as appropriate.	Requirement 4

Year	Monitoring Survey	Timing	Description	Target & Effectiveness measures	Potential interventions	Securing mechanism
Bat Boxes						
Y1 to Y3 (inclusive)	Bat boxes will be monitored on an annual basis during the construction phase. The surveys will be to confirm presence/ absence and the species assemblage present.	Annually in September (optimal time)	All monitoring will be conducted by an appropriately licensed bat ecologist. Monitoring will consist of a check of any bat boxes installed for evidence of use, such as droppings, smoothing, feeding remains, smell, staining and bat fly (*Nycteribiid*) pupae.	Requirements as detailed in the draft non-licensable method statement or Natural England Bat Development Licence. Success criteria will include the uptake of occupation by bats, the number of bats present increases or remains consistent throughout the construction phase.	In the event of a bat box not being occupied within three years of installation, consideration will be given to moving the box to an alternative site nearby, to be determined by a licensed bat ecologist and in agreement with the Ecology Working Group. The box will be moved to an alternative suitable location if it is considered likely that conditions in the location have changed and this has impacted the suitability for bats. If the locations are still considered suitable, in agreement with the Ecology Working Group, the boxes may be left in situ. It may be that the roosting opportunities have not been found by the bats or that in that particular location roost sites are not a limiting requirement.	PSL if relevant Requirement 4
Y4 to Y8 (inclusive)	Boxes will continue to be monitored for five-years beyond the completion of construction. The surveys will be to confirm presence/ absence and the species assemblage present.	Annually in September (optimal time)	All monitoring will be conducted by an appropriately licensed bat ecologist. Monitoring will consist of a check of any bat boxes installed for evidence of use, such as droppings, smoothing, feeding remains, smell, staining and bat fly (*Nycteribiid*) pupae.	Requirements as detailed in the draft non-licensable method statement or Natural England Bat Development Licence. Success criteria will include occupation by bats and the number of bats present increases or remains constant.	As above.	PSL if relevant Requirement 4
Crossing Point Locations (Two Village Bypass & Sizewell Link Road only)						

Year	Monitoring Survey	Timing	Description	Target & Effectiveness measures	Potential interventions	Securing mechanism
Y1 to Y3 (inclusive)	Key commuting routes/ crossing point locations will be monitoring across the two road scheme route corridors using a combination of manned surveys and static detectors and potentially thermal imaging where practicable over the course of the construction phase. The monitoring will assess two key indicators: - The bats usage commuting routes/ key landscape features compared to the base line surveys. - The uptake of mitigation as it is installed as well as whether bats continue to cross the carriageway which could result in mortality during the operational phase. [For Sizewell Link Road, see also Table 4.4 for the Main Development Site, given potential for usage by shared bat population]	In May, June, July, August and September Y1, Y2 and Y3.	Crossing point locations to be confirmed following the undertaking of targeted surveys in 2021 and the rationalization/ identification of important flight lines. Locations on eastern end Sizewell Link Road will also be aligned with the monitoring programme for the Main Development Site, see **Table 4.4**, given potential for usage by shared bat population.	The target is for the usage of the mitigation features designed for the crossing points to be no lower than the baseline levels of usage of the existing linear features crossed by the new road.	Species assemblage and numbers will be collected and compared against the baseline survey information. Any significant reduction in the overall usage of the commuting routes will be identified. In addition, any evidence that crossing point features are not functioning (i.e. bats are not safely crossing the construction corridor) will be addressed. Additional planting could be provided. In the event of additional bat mitigation being required, this will be reviewed, discussed and agreed with stakeholders.	Requirement 4

Year	Monitoring Survey	Timing	Description	Target & Effectiveness measures	Potential interventions	Securing mechanism
Y4 to Y8 (inclusive)	Key commuting routes/ crossing point locations will be monitoring across the two road scheme route corridors using a combination of manned surveys and static detectors and potentially thermal imaging where practicable over the course of the operational phase. The monitoring will assess two key indicators: - The bats usage commuting routes/ key landscape features compared to the base line surveys. - The uptake of mitigation as it is installed as well as whether bats continue to cross the carriageway during the operational phase.	In May, June, July, August and September Y4, Y5, Y6 and Y7.	The above locations would be monitored using the same approach as during construction (static detectors). One static detector position is proposed per commuting route (matched with pre construction locations), with activity transects to cover all routes identified monthly).	The target is for the usage of the mitigation features designed for the crossing points to be no lower than the baseline levels of usage of the existing linear features crossed by the new road.	Success of existing mitigation measures into the operational phase will be determined through the use of commuting routes over the course of the construction phase being maintained into the operational phase and at similar (or greater) levels to those recorded during baseline monitoring. Additional mitigation measures which could be implemented during the operational phase include additional landscape planting to form broader bat corridors for bats. The **oLEMP** provides scope to amend the balance between woodland / scrub planting and acid grassland provision to provide greater connectivity for bats if this is deemed appropriate.	Requirement 4

*The operational monitoring requirements will be confirmed during the construction phase depending on the finding and success of mitigation implemented.

5.5 Reptiles

a) All Associated Development Sites

5.5.2 No monitoring measures beyond the generic measures identified in **Section 1.3** of this plan have yet been defined for reptiles at the associated development sites. Monitoring requirements are included within this section if they are determined to be required.

5.5.3 Non-licensable method statements have been prepared for all associated development sites:

- Northern park and ride (included as **Volume 3, Appendix 7A.6B** of the **ES** [APP-364]).
- Southern park and ride (included as **Volume 4, Appendix 7A.5B** of the **ES** [APP-395]).
- Two Village Bypass (included as **Volume 5, Appendix 7A.6D** of the **ES** [APP-426]).
- Sizewell Link Road (included as **Volume 6, Appendix 7A.6B** of the **ES** [APP-462]).
- Yoxford roundabout and other highway improvements (included as **Volume 7, Appendix 7A.5A** of the **ES** [APP-495]).
- Freight management facility (included as **Volume 8, Appendix 7A.4B** of the **ES** [APP-524]).
- Rail (included as **Volume 9, Appendix 7A.6B** of the **ES** [APP-556]).

5.5.4 These non-licensable method statements provide details to be followed if protected reptile species are unexpectedly detected within the active construction sites.

5.6 Terrestrial Mammals

a) Water Vole

i. Two Village Bypass

5.6.1 The two village bypass is the only associated development site that has the potential to impact water vole populations on the River Alde through:

- Habitat loss and habitat fragmentation.

- Incidental mortality.

5.6.2 **Table 5.3** below, sets out the broad monitoring surveys to be implemented during the construction and operational phases. Given the localised scale of the construction works at the River Alde, displacement of water voles, rather than translocation, is likely to be the preferred mitigation working approach and so no monitoring of receptor sites or translocation success will be required.

b) Otter

i. Two Village Bypass

5.6.3 The two village bypass has the potential to impact otters through:

- Habitat loss and habitat fragmentation (including connectivity).
- Disturbance effects on species population (comprising light, noise and visual effects).
- Incidental mortality.

5.6.4 **Table 5.3** below sets out the monitoring surveys to be implemented during the construction and operational phases.

Table 5.3: Terrestrial Mammal Monitoring for Associated Development sites (Construction and Operation)

Year	Monitoring Survey	Timing	Description	Target	Effectiveness Measure	Potential Interventions	Securing mechanism
Water vole (Two Village Bypass)							
Y1 to Y3 (inclusive)	Monitoring requirements are proposed where there is a working area with maximum length of 50m (for watercourse this equates to 50m on each bank) and where displacement techniques are proposed. Surveys will consider population densities which will be compared against baseline survey data. Monitoring surveys are required to understand the effectiveness of the mitigation implemented.	Annual monitoring of water voles across the site in Y1, Y2, Y3, Monitoring surveys will be carried out during the breeding season (March to October).	Given the conditions on site, the use of floating platforms is recommended to aid survey efforts. Habitat condition assessments will also be required of the water vole receptor areas if used to receive translocated animals. However, at the time of writing, displacement is believed to the be appropriate method and translocation works are not anticipated.	As set out in the Natural England Water Vole Licence.	Provide early warning of any changes in the population so that appropriate action can be taken. Success criteria confirming the effectiveness of mitigation would include a stable water vole population in the section of the River Alde crossed by the new road. The colonization of new ditches and mitigation by water voles naturally over the course of the construction phase and continued through the operational phase. Habitat conditions remain suitable and continue to be appropriately managed.	In the event of the mitigation measures in place not being successful, as determined by survey results, these will be subject to review and further measures to be implemented to be discussed and agreed through the Environment Review Group Such measures could result in changes to the management approaches and methods.	PSL Requirement 4
Y4 to Y8 (inclusive)	Monitoring surveys of water courses and ditches affected by the construction phase activities as well as the mitigation areas. Surveys to include the mitigation areas too. Surveys will include population density monitoring and data will be compared against the baseline data collected as well as that	Monitoring in Y5 and Y8.				As above	Requirement 4

Year	Monitoring Survey	Timing	Description	Target	Effectiveness Measure	Potential Interventions	Securing mechanism
	collected during the construction phase.						
Otter (Two Village Bypass)							
Y1 to Y3 (inclusive)	Monitoring surveys across the site targeting locations where otters have been confirmed as present will continue during the construction and operational phases to assess the effectiveness of the mitigation measures being implemented and to monitoring the distribution of otters across the site and whether the numbers present reduce over the course of the construction phase. Inspections of otter proof fencing installed along the scheme will be subject to regular maintenance inspections.	Y1, Y2, Y3.	Monitoring would comprise the searching of habitats along watercourse edges for spraint signs as well as the setting of motion sensitive cameras at locations in close proximity to the works. Visual inspections of otter proof fencing to ensure there are no defects or weaknesses where otters could then enter into the works areas and / or stray onto live carriageways. These inspections will be carried out on a regular basis and over the course of the aftercare period.	As set out in the Natural England licence or non-licensable method statements	The mitigation measures implemented would be considered successful if otters continue to be recorded as present in the local area as identified as part of the baseline surveys. No otter mortality associated with vehicle collisions during construction or operation of the new road.	In the event of the mitigation measures in place not being successful, as determined by survey results, these will be subject to review and further measures to be implemented to be discussed and agreed through the Environment Review Group Such measures could result in changes to the management approaches and method, such as otter fencing amendments.	Requirement 4
Y4 to Y8 (inclusive)		Y4, Y6, Y8				As above	Requirement 4

*The operational monitoring requirements will be confirmed during the construction phase depending on the finding and success of mitigation implemented.

References

Ref. 1. JNCC Joint Statement, Favourable Conservation Status: UK Statutory Nature Conservation Bodies Common Statement Favourable Conservation Status: UK Statutory Nature Conservation Bodies Common Statement, 2018, Available on: https://data.jncc.gov.uk/data/b9c7f55f-ed9d-4d3c-b484-c21758cec4fe/FCS18-InterAgency-Statement.pdf

APPENDIX 1: MAIN DEVELOPMENT SITE BAT MONITORING LOCATIONS

1.1.1 This appendix presents a summary of the proposed bat monitoring locations at the main development site.

Area Sensitive to Noise Disturbance	Area Important for Roosting/ Foraging/ Commuting	Species Susceptable to Disturbance
Upper Abbey Farm/ Upper Abbey Bridleway and Fiscal Policy Junction	Roosting	• Barbastelle • Natterer's Bat • Daubenton's Bat, Brown Long-eared Bat, Common Pipistrelle and Soprano Pipistrelle
	Foraging/ Commuting	• Barbastelle • Natterer's Bat • Leisler's Bat/ Nathusius Pipistrelle • Noctule and Serotine • Daubenton's Bat, Brown Long-eared Bat, Common Pipistrelle and Soprano Pipistrelle
Kenton Hills/ Fiscal Policy/ Nursery Covert complex	Roosting	• Barbastelle • Natterer's Bat • Noctule and Serotine • Daubenton's Bat, Brown Long-eared Bat, Common Pipistrelle and Soprano Pipistrelle
	Foraging/ Commuting	• Barbastelle • Natterer's Bat • Leisler's Bat/ Nathusius Pipistrelle • Noctule and Serotine • Daubenton's Bat, Brown Long-eared Bat, Common Pipistrelle and Soprano Pipistrelle
Black Walks	Roosting	None
	Foraging/ Commuting	• Barbastelle • Natterer's Bat • Leisler's Bat/ Nathusius Pipistrelle • Noctule and Serotine • Daubenton's Bat, Brown Long-eared Bat, Common Pipistrelle and Soprano Pipistrelle
Goose Hill	Roosting	• Noctule and Serotine
	Foraging/ Commuting	• Barbastelle • Natterer's Bat • Noctule and Serotine • Daubenton's Bat, Brown Long-eared Bat, Common Pipistrelle and Soprano Pipistrelle
Stonewall Belt	Roosting	• Barbastelle
	Foraging/ Commuting	• Barbastelle • Natterer's Bat • Leisler's Bat/ Nathusius Pipistrelle • Noctule and Serotine

Area Sensitive to Noise Disturbance	Area Important for Roosting/ Foraging/ Commuting	Species Susceptable to Disturbance
		• Daubenton's Bat, Brown Long-eared Bat, Common Pipistrelle and Soprano Pipistrelle
SSSI Crossing	Roosting	None
	Foraging/ Commuting	• Barbastelle • Natterer's Bat • Leisler's Bat/ Nathusius Pipistrelle • Noctule and Serotine • Daubenton's Bat, Brown Long-eared Bat, Common Pipistrelle and Soprano Pipistrelle
Leiston Old Abbey	Roosting	• Natterer's Bat • Daubenton's Bat, Brown Long-eared Bat, Common Pipistrelle and Soprano Pipistrelle
	Foraging/ Commuting	• Barbastelle • Natterer's Bat • Leisler's Bat/ Nathusius Pipistrelle • Noctule and Serotine • Daubenton's Bat, Brown Long-eared Bat, Common Pipistrelle and Soprano Pipistrelle
Grimseys	Roosting	• Barbastelle • Noctule and Serotine
	Foraging/ Commuting	None
Ash Wood	Roosting	• Natterer's Bat • Noctule and Serotine • Daubenton's Bat, Brown Long-eared Bat, Common Pipistrelle and Soprano Pipistrelle
	Foraging/ Commuting	• Barbastelle • Leisler's Bat/ Nathusius Pipistrelle • Noctule and Serotine • Daubenton's Bat, Brown Long-eared Bat, Common Pipistrelle and Soprano Pipistrelle

APPENDIX 2: MONITORING REQUIREMENTS INCLUDED WITHIN THE OUTLINE LANDSCAPE AND ECOLOGY MANAGEMENT PLANS

Main Development Site

Habitat / Feature Type	Party responsible	Timing of Monitoring	Requirements
Establishment	SZC Co.	Various	There is always uncertainty where new habitat is being established. This is impacted by weather conditions, the quality of seed stock or green hay, variations in the conditions of the site, and problems with pernicious weeds. It is therefore recommended the management and monitoring of the target habitats be intensive during the first year and frequent over the subsequent four years to ensure any problems are identified early and resolved as quickly as possible. Checks would be undertaken by a suitably qualified specialist. The inspections would be undertaken to assess the establishment of habitats and the effectiveness of the oLEMP and aftercare prescriptions, paying particular attention to: • the success of establishment including disease, damage or death of planting; • inappropriate use or vandalism; • general appearance and condition; • the presence of invasive or non-native species that may require treatment; and • any evidence of protected species that could have implications for future management. Safety issues reported by the public shall also be investigated as soon as practically possible and remedial works undertaken as necessary Public Engagement. Public engagement would be undertaken by SCZ Co. to keep users of the site informed of the works. A monitoring report would be prepared for SZC Co.
Target Communities Detailed LEMP	SZC Co.	Check will be undertaken twice a year in years 0, 1 and 2 Check annually year 3 - 5 Years 5-10 – A review of monitoring requirements would be undertaken in year 5 to detail timings for Years 5-10. If objectives are not met, then the Detailed LEMP would require amendment.	Before and after enhancement, reinstatement or creation a full botanical species list and quality assessment should be carried out to monitor the success of restoration and as a baseline for monitoring, this should include the presence and abundance of species. The NVC may be an appropriate method for collecting data for monitoring or this may be bespoken to the target communities. This would also include monitoring with regards to achieving the desired communities and quality as demonstrated in the biodiversity net gain report (**ES Volume 2, Chapter 14, Appendix 14E**). Monitoring is essential to track the development of the target habitat(s) and troubleshoot any problems. Target communities would be set for each habitat type for years 1, 2, 5 and 10. Success would be monitored via the yearly monitoring surveys and reporting which would feed into future iterations of the detailed LEMP.

Habitat / Feature Type	Party responsible	Timing of Monitoring	Requirements
Dry Sandlings Grasslands Semi-improved Grassland	SZC Co.	As above	Regular checks of the newly established areas of grassland shall be made during the first five years of establishment. Targets would be set for each grassland type according to the species list gathered before construction and thresholds identified for Section 41 of the Natural Environment and Rural Communities (NERC) Act (Ref. 1.39)/Suffolk Biodiversity Action Plan (Ref. 1.40) quality lowland meadow in the Countryside Stewardship Higher Tier Scheme (Ref. 1.37) made specific to the site, as well as the Joint Nature Conservation Committee guidance. Monitoring would follow the Common Standards Monitoring Guidance for Lowland Grassland (Ref. 1.35). This would weight desirable species against the injurious ones.
Arable field margins	SZC Co.	As above	Regular checks of the newly established arable field margins shall be made during the first five years of establishment. Targets would be set according to the species list gathered before construction and thresholds identified for Section 41 of the NERC Act/ Suffolk Biodiversity Action Plan quality arable field margins in the Countryside Stewardship Higher Tier Scheme made specific to the site. Monitoring would be undertaken in accordance with cross-compliance obligations for land management.
Hedgerows	SZC Co.	As above	Targets would be set according to thresholds identified for Section 41 of the NERC Act/Suffolk Biodiversity Action Plan quality hedgerows in the Countryside Stewardship Higher Tier Scheme made specific to the site. Regular checks shall be made during the first five years of establishment to replace dead or diseased specimens, control weeds, re-stake plants as necessary and check deer/rabbit fencing. Monitoring would follow the Hedgerow Survey Handbook (Ref. 1.36).
Woodland	SZC Co.	As above	Targets would be set according to thresholds identified for Section 41/Biodiversity Action Plan quality woodland in the Countryside Stewardship Higher Tier Scheme made specific to the site. Regular checks shall be made during the first five years of establishment to replace dead or diseased specimens, control weeds, re-stake plants as necessary and check deer/rabbit fencing. Monitoring would follow the Common Standards Monitoring Guidance for Woodland Habitats (Ref. 1.32). This would weight desirable species against the injurious ones.
Vegetated shingle	SZC Co.	As above	Targets would be set according to thresholds identified for Section 41/Biodiversity Action Plan quality vegetated shingle habitat made specific to the site. Monitoring would follow the Common Standards Monitoring Guidance for Vegetated Coastal Shingle Habitats (Ref. 1.33). This would weight desirable species against the injurious ones. Shingle coverage is to be monitored on a regular basis. Should coverage of shingle become reduced, shingle replenishment would be required.
Dune grassland	SZC Co.	As above	Targets would be set according to thresholds identified for Section 41/Biodiversity Action Plan quality dune grassland habitat made specific to the site. Monitoring would follow the Common Standards Monitoring Guidance for Sand Dune Habitats (Ref. 1.34). This would weight desirable species against the injurious ones.
Dry Sandlings Grassland	SZC Co.	As above	The ultimate vision for the Dry Sandlings Grassland is that it evolves into an acid grassland/heath mosaic. While aspirational targets would be set, it may be that the targets require amending depending on the realities of soil pH and structure and water availability. Targets would be set for acid grassland according to the species list gathered before construction and thresholds identified for Section 41/Biodiversity Action Plan quality lowland meadow in the Countryside Stewardship Higher Tier Scheme made specific to the site, as well as the Joint Nature Conservation Committee guidance. Grassland habitat indicators would typically include the presence and abundance of key herb species present. This would weight desirable species against the injurious ones.

Habitat / Feature Type	Party responsible	Timing of Monitoring	Requirements
			Monitoring would follow the Common Standards Monitoring Guidance for Lowland Grassland Habitats (Ref. 1.35). Targets would be set for heathland according to the species list gathered before construction and thresholds identified for Section 41/Biodiversity Action Plan quality lowland heathland in the Countryside Stewardship Higher Tier Scheme made specific to the site, as well as the Joint Nature Conservation Committee guidance. Heathland habitat indicators would typically include the presence and abundance of key herb species present. This would weight desirable species against the injurious ones. Monitoring would follow the Common Standards Monitoring Guidance for Lowland Heathland (Ref. 1.30).
Reed bed habitat	SZC Co.	As above	Targets would be set for reed bed according to the species list gathered before construction and thresholds identified for Section 41/Biodiversity Action Plan quality lowland wetland habitat in the Countryside Stewardship Higher Tier Scheme made specific to the site, as well as the Joint Nature Conservation Committee guidance. Lowland wetland indicators would typically include the presence and abundance of key herb species present. This would weight desirable species against the injurious ones. Monitoring would follow the Common Standards Monitoring Guidance for Lowland Wetland Habitats (Ref. 1.31). This would weight desirable species against the injurious ones.
Marsh, Fen and Reed bed	SZC Co.	As above	Targets would be set for wet grassland according to the species list gathered before construction and thresholds identified for Section 41/Biodiversity Action Plan quality lowland wetland habitat in the Countryside Stewardship Higher Tier Scheme made specific to the site, as well as the Joint Nature Conservation Committee guidance. Lowland wetland indicators would typically include the presence and abundance of key herb species present. This would weight desirable species against the injurious ones. Regular checks of the newly established area of wet grassland of the SSSI crossing shall be made during the first five years of establishment. Monitoring would follow the Common Standards Monitoring Guidance for Lowland Wetland Habitats (Ref. 1.31). This would weight desirable species against the injurious ones. Monitoring of fen vegetation has been carried out since 1993 by SWT as a means of assessing the success of the management practices adopted at the site. A number of quadrats have been set up and are visited every two years on a rolling programme. Monitoring would be aligned with this process.
Year five survey and review	SZC Co.	Year 5	More specific monitoring shall include botanical surveys of Dry Sandlings Grassland habitats in year 5 following implementation. The following surveys, at a minimum, shall be included in the year five review: 1 botanical surveys - The species diversity of dry grassland shall be assessed with species and assessment of their cover recorded along with tussock cover (estimate of cover assessed within 1m radius of 20 random sample points) and sward height, using a sward stick; and 2 protected species surveys: monitoring surveys of bat and bird boxes, and the reptile population. The results of the surveys shall be reviewed to identify any revisions to the management prescriptions deemed to be required to meet the objectives for the medium and long-term. Revised prescriptions shall be produced to guide the next five years. This information shall be presented as a 'Five Year Monitoring Report' to be shared with relevant stakeholders.

Two Village Bypass

[Please see updated **Two Village Bypass OLEMP** (Doc Ref. 8.3 A(A))]

Sizewell Link Road

[Please see updated **Sizewell Link Road OLEMP** (Doc Ref. Doc Ref. 8.3 B(A))]