The Sizewell C Project

8.3 Associated Development Design Principles Appendix B: Sizewell Link Road Outline Landscape and Ecological Management Plan

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None provided.

EXECUTIVE SUMMARY

This **Sizewell link road outline Landscape and Ecology Management Plan** seeks to provide clear objectives and general principles for the establishment and longer-term management of the landscape and ecological mitigation proposals identified for the soft estate within the Sizewell link road site (hereafter referred to as the site), following construction of Sizewell link road. The spatial extent of the oLEMP is the same as the area within the **Illustrative Masterplan** provided at **Figures 2.1** to **2.7** within **Volume 6**, **Chapter 2** of the **ES**. The aim of the oLEMP is to ensure post-construction habitats are created correctly and managed for their successful establishment and integrated within the surrounding landscape.

Objectives for post-construction habitats and landscape areas have been informed and established through a review of ecological survey information, the landscape strategy, policy requirements and in response to site specific mitigation and consultation.

The overriding intention of the site re-instatement, once the Sizewell link road has been constructed, is to conserve, restore and enhance landscape character and biodiversity at a landscape scale to provide long-term benefits to the biodiversity of Suffolk as a whole. Where possible, existing landscape features of importance for ecology and visual screening would be retained during construction.

New habitats would contribute to enhancing the landscape character of this section of the Ancient Estate Claylands and Rolling Estate Claylands. They would also minimise the visual impact of Sizewell link road in views from the surrounding landscape, minimise impacts on cultural heritage resources, improve access and recreation infrastructure and ensure the long-term sustainability and resilience of the landscape, including to predicted climate change.

Habitat creation approaches and subsequent management proposals for habitats that would be created are outlined within this document including time frames.

Monitoring of newly created and existing habitats would be undertaken to measure the success of the habitat establishment and subsequent management proposals and to determine if interventions are required.

The **oLEMP** provides the framework for the Landscape and Ecological Management Plan (LEMP) which will provide further details of the management measures and implementation of the habitat created, along with ongoing monitoring arrangements. This is an appendix to the **Associated Development Design Principles** (Doc Ref. 8.3) [APP-589] which is secured by requirements within **Schedule 2** of the **Draft DCO** (Doc Ref. 3.1(B)).

1 INTRODUCTION

1.1.1 This oLEMP seeks to provide clear objectives and general principles for the establishment and longer-term management of the landscape, and ecological mitigation proposals identified for the area within the Sizewell link road site (hereafter referred to as the site), following construction of Sizewell link road site. The spatial extent of the oLEMP is the same as the area covered by the **Illustrative Masterplan** provided at **Figures 6.2.2** to **6.2.8** within **Volume 1**, **Chapter 6** of the **Environmental Statement Addendum** (**ES Addendum**) (Doc Ref. 6.14).

1.1.2 The aim of the **oLEMP** is to ensure newly created post-construction habitats are successfully created and then correctly managed to ensure their successful establishment and integration within the surrounding landscape.

1.1.3 The oLEMP provides the framework for the Landscape and Ecological Management Plan (LEMP) which will provide further details of the management measures and implementation of the habitat created, along with ongoing monitoring arrangements. This is an appendix to the **Associated Development Design Principles** (Doc Ref. 8.3) [APP-589] which is secured by requirements within **Schedule 2** of the **Draft DCO** (Doc Ref. 3.1(B)). The oLEMP and subsequent LEMP are intended to be operational documents that provide guidance for contractors and land managers.

1.1.4 The overarching objective of the oLEMP is to provide an overview of how the habitats to be established within along Sizewell link road would be created and then managed in the long-term. Objectives for these habitats and areas have been informed and established through a review of ecological survey information, the landscape strategy, policy requirements and in response to site specific mitigation and consultation.

1.1.5 The LEMP will be developed through detailed design and will contain details of target communities and key performance indicators.

1.1.6 The oLEMP and subsequent LEMP would be managed by SZC Co. for a total of five years, or until adoption by the Highways Authority. It is expected that the LEMP would contain long term management objectives for the proposed development.

1.1.7 Detailed descriptions of the proposed development and the different phases of development are provided in **Volume 6**, **Chapter 2** of the **Environmental Statement (ES)** (Doc Ref. 6.7) [APP-446].

1.1.8 This document should be read in conjunction with the following documents:

- **Code of Construction Practice** (**CoCP**) (Doc Ref. 8.11(A));

- **Associated Development Design Principles** (Doc Ref. 8.3) [APP-589];
- **Sizewell Link Road Plans – Plans for Approval: Sizewell Link Road Proposed Landscape Masterplan and Finished Levels** – Key Plan and Sheets 1 to 4 (Doc Ref. 2.10(A));
- mitigation strategies for relevant protected and notable species, as identified in **Volume 6**, **Chapter 7** of the **ES** [APP-461].

2 DOCUMENT STRUCTURE

2.1.1 The structure of this document is as follows:

- **Section 3:** sets out the baseline for the existing landscape typologies, habitats and soils types within the site;
- **Section 4:** sets out the landscape and ecological vision of the **oLEMP**;
- **Section 5:** sets out broad management prescriptions per habitat type;
- **Section 6:** sets out broad monitoring requirements per habitat type; and
- **Section 7:** lists the document references.

2.1.2 In addition to the above, this **oLEMP** is supported by **Figures 1 and 2.** These figures also appear as **Figure 7.1** within **Volume 6**, **Chapter 7** of the **ES, and Figure 6.3** within **Volume 6**, **Chapter 6** of the ES [APP-463]. **Plates 4.1** to **4.7** have been produced specifically for this document.

3 BASELINE

3.1 Existing habitats and landscape typologies

a) National Character Areas

3.1.1 The Suffolk Coast and Heaths NCA 82 (Ref. 1.1) is situated on the North Sea coast between Great Yarmouth to the north and the port town of Harwich to the south. It forms a long, narrow band extending between 10 kilometres (km) and 20km inland. The South Norfolk and High Suffolk Claylands NCA 83 (Ref. 1.2) is located on the western boundary of NCA 82. It occupies a large area of central East Anglia, stretching from just below Norwich in the north to the River Gipping in the south.

3.1.2 The eastern extent of the site and surrounding area is situated within NCA82: Suffolk Coast and Heaths. NCA82 shows characteristics of gently undulating farmland with areas of woodland and forest plantation in the surrounding area. This NCA is described within the NCA summary as sparsely settled and *"…mainly flat or gently rolling, often open but with few*

commanding viewpoints". More than half of the NCA is utilised for arable and pig farming. The remainder of the NCA (beyond the study area) is coast, lowland heaths (Sandlings) and forest plantations. Close to the boundary between NCA82 and the adjacent NCA83, the landscape is described as *"The boundary between the Suffolk Coast and Heaths and the more wooded boulder clay plateau of central East Anglia (South Norfolk and High Suffolk Claylands and South Suffolk and North Essex Claylands) is incised by several small east–west river valley corridors".*

3.1.3 The western extent of the site and study area is situated within NCA83: South Norfolk and High Suffolk Claylands (Ref 6.16). This NCA covers a large area of central East Anglia, and is a predominantly flat clay plateau incised by numerous small-scale wooded river valleys. Large areas of woodland are noted as being scarce within this LCA, with views frequently open and occasionally exposed *"although within the valleys it is possible to find quite confined landscapes with intimate views"*. NCA83 is also *"an area of mixed settlement patterns with nucleated villages found in the west and along the river valleys, intermixed with dispersed hamlets and moated farmsteads. Large, often interconnected village greens or commons are a key feature of the area"*. The description also notes that *"PRoW, including the Boudicca Way and Angles Way long-distance footpaths, and country estates and parklands continue to provide recreational opportunities"*.

3.1.4 The site and surrounding area is generally representative of its corresponding character area with the small east-west valley corridors, arable farmland and woodland. The landscape is characteristically flatter to the west and more rolling to the east.

b) Local landscape character areas/types

3.1.5 The following LCTs, as identified within the Suffolk Landscape Character Assessment (Ref. 1.3), are located within 2km of the site and are shown on **Figure 1**:

- Ancient Estate Claylands;
- Coastal Levels;
- Estate Sandlands;
- Rolling Estate Claylands; and
- Valley Meadows and Fens.

3.1.6 Most of the site lies within the Ancient Estate Claylands LCT, with some areas towards the valley bottoms falling within the Rolling Estate Claylands LCT.

3.1.7 The Ancient Estate Claylands LCT is a clay plateau area running north-south and located to the west of both the coastal levels and the 'Sandlands'. Key characteristics include parklands, of which there are a number in the vicinity of the site, a dispersed settlement pattern with isolated farmsteads, and a mix of organic and straight field boundaries, depending on landowner influences.

3.1.8 The Rolling Estate Claylands LCT is found on rolling valley sides, which within the study area includes several unnamed watercourses that flow into the Minsmere Old River, including two main rivers referred to as 'Middleton Watercourse' and 'Theberton Watercourse'. The east facing valley slopes that the site passes through are broadly characteristic of this LCT, having a rolling landform and fragmented woodland cover.

c) Baseline habitats

3.1.9 **Figure 2** details the broad habitat categories as defined by the Phase 1 habitat categories (Ref. 1.4), present within the site.

3.1.10 The site comprises predominately intensively managed arable fields with no scarce arable weeds or other notable plant species having been identified. Arable field margins are a habitat listed under Suffolk's Priority Species and Habitat list, but no botanically rich arable margins were identified within the site boundary.

3.1.11 There are also small areas of poor semi-improved grassland, including one large field of neutral semi-improved grassland supporting common grassland species including Meadow Foxtail (*Alopecurus pratensis*), Soft-brome (*Bromus hordaceus*), Fescues (*Festuca* spp.), Yorkshire-fog (*Holcus lanatus*), Meadow Buttercup (*Ranunculus acris*), Creeping Buttercup (*Ranunculus repens*) and Common Bird's-foot-trefoil (*Lotus corniculatus*). There are also two smaller areas of neutral semi-improved grassland present within the site. Both areas of grassland support a variety of common species including Meadow Foxtail, Soft Brome, Yorkshire-fog and Meadow Buttercup.

3.1.12 The arable fields present within the site are bordered by fences and hedgerows and most of the hedgerows present are species-rich with trees. Alongside Littlemoor Road is a species-rich road verge.

3.1.13 Twelve blocks of broadleaved semi-natural woodland and two blocks of plantation woodland are present wholly or partly within the site. None of these woodlands are ancient.

3.1.14 Within the site boundary, there are seven ditches and four watercourses and of these, ten were surveyed and all were dry at the time of survey. Most of the ditches had recently been cleared of all aquatic and marginal vegetation at the time of survey.

3.1.15 107 waterbodies (ponds) were identified within 500m of the site of which seven within the site boundary held water on the survey date.

3.1.16 Protected species relevant to the scheme include great crested newt (*Triturus cristatus*), the breeding bird assemblage and the bat assemblage. The great crested newts breed in several of the ponds within and adjacent to the site boundary and a mitigation strategy for this species has been developed (**Volume 3**, **Appendix 2.9.C** of the **ES Addendum**), which includes the creation of terrestrial habitats and new ponds and is aligned with this oLEMP.

3.1.17 Further information can be found in **Volume 2**, **Chapter 14** of the **Environmental Statement** (Doc Ref. 6.3) [APP-224].

3.2 Soils

3.2.1 The site is underlain by quaternary sand overlain by a range of drift deposits, from heavy textured till and head deposits to sands and gravels. This variation in geology results in variability in soil characteristics.

3.2.2 The main soil type present within the site is characterised as being slowly permeable seasonally waterlogged clayey and fine loamy over clayey soil. These belong to the Ragdale Soil Association[1]. Typical profiles for these soils comprise dark greyish and mottled clay, or clay loam topsoil overlying greyish brown to grey mottled subsoil (which can be calcareous). The presence of mottling (small patches of red/red-brown colour) are evidence of periodic waterlogging of these soils.

3.2.3 The main land use on these soils where they occur in eastern England is described as being Winter cereals.

3.2.4 In the eastern part of the site the soils are described as freely draining slightly acid, but base-rich soils. These belong to the Melford Soil Association. Typical profiles for these soils comprise dark brown clay loam overlying yellowish brown to pale brown clay loam or clay which can be very calcareous at depth.

3.2.5 These soils are mapped as occurring in a strip to the east of the A12 (Area 1), along the line of Fordley Road (between Areas 3 and 4), south-west of Anneson's Corner (Area 4), and west of Brown's Plantation (Area 6).

3.2.6 From the detailed surveys the soils in each area of the site are described as set out in **Table 3.1**.

[1] A Soil Association represents a group of soil types which are typically found occurring together in the landscape.

Table 3.1: Soil texture descriptions

Area	Location	Description of soil texture
Area 1.	From the A12 to Footpath E-344/013/0 and E584/016/A (land west of the East Suffolk line)	Medium to heavy textured clay loams overlying heavy textured clays.
Area 2.	From land west of the East Suffolk line to Littlemoor Road.	Heavy textured clay loams and light textured sandy loams overlying heavy textured clays.
Area 3.	From Littlemore Road to east of Garden House Farm (including link to B1122 west of Middleton Moor).	Predominantly heavy textured clay loams, and light textured sandy loams overlying heavy textured clays with some medium textured clay loams overlying medium textured clay loams (sandy).
Area 4.	From east of Garden House Farm to land west of Theberton.	Heavy textured clay loams, and light textured sandy loams overlying heavy textured clays as well as lightly textured loams overlying lightly textured sands.
Area 5.	From land to the west of Theberton to the south of Theberton.	Medium to heavy textured clay loams and light textured sandy loams overlying heavy textured clays.
Area 6.	From south of Theberton to the B1122 adjacent to Brown's Plantation.	Medium textured clay loams overlying heavy textured clays or lightly textured sands as well as lightly textured loams overlying lightly textured sands.

4 LANDSCAPE AND ECOLOGY VISION

4.1 Objectives

4.1.1 The objectives that underpin this management plan are designed to contribute towards the overall design vision and landscape strategy for the development as articulated in the **Associated Development Design Principles** (Doc Ref. 8.3) [APP-589].

4.1.2 The overriding intention is to conserve, restore and enhance landscape character and biodiversity. Where possible, existing landscape features of importance for ecology and visual screening would be retained during the construction of Sizewell link road, such as Brown's Plantation and Bobbett's Wood.

4.1.3 Inevitably given the scale of development, construction would result in the removal of vegetation and habitat loss and fragmentation (but mainly of relatively lower value arable land). The intention is to integrate the Sizewell link road into the landscape that it passes through to contribute to enhancing the landscape character of this section of the Ancient Estate Claylands and Rolling Estate Claylands.

4.1.4 Other design objectives are to create and manage planting to minimise the visual impact of the Sizewell link road in views from the surrounding landscape. This would minimise impacts on cultural heritage resources, improve access and recreation infrastructure and ensure the long-term sustainability and resilience of the landscape – including to predicted climate change.

4.1.5 Specific landscape and ecological objectives, which will guide long-term management, are as follows:

- To return the temporary construction areas along the route to their current uses, which are predominantly arable and semi-improved pasture agriculture respectively.
- To reinforce and expand existing linear wooded corridors and create others to provide greater long-term connectivity for bats and other species on a landscape scale. Specifically, native woodland would be created east of the East Suffolk Line, in the vicinity of the existing Fordley Road, in the vicinity of Trust Farm, and linking Plumhill Covert to Pretty Road.
- Provide replacement ponds to compensate for the temporary and permanent loss of great crested newt breeding ponds and for proposed woodland planting, hedgerow planting and grassland planting to

replace lost terrestrial habitats and to improve connectivity for this species.

- To provide enhancement ponds which would provide additional pond habitat in the area and contribute to bio-diversity net gain.
- Ensure mitigation structures such as oversized culverts, crop kerb, filter drains / underpasses remain functional and provide safe crossing points for protected species, with a particular focus on great crested newts and bats, over the course of the operational phase.
- Ensure landscape features and mitigation areas for nocturnal species are not illuminated or subject to light spill and dark corridors provided.
- To maximise the capacity of wildlife and landscape to cope with climate change, using a planting palate of species resilient to drought and disease that are not reliant on irrigation measures.

4.1.6 These management objectives have been designed with the aim of enabling restoration at a landscape scale. The integration of infrastructure, landscape and access; and minimising habitat severance and increasing connectivity would provide long-term benefits to biodiversity of Suffolk as a whole rather than at a site level.

4.2 Proposed habitat types

4.2.1 This **oLEMP** provides high level management and monitoring specifications for the following broad landscape types that are proposed to be created, enhanced or restored following completion of construction within the development site boundary. **Plates 4.1** to **4.7** illustrate the broad habitat types that would be created on the post-construction site within the DCO boundary, subject to this **oLEMP**. The habitat types are as follows:

- arable farmland;
- broadleaved woodland;
- scattered trees;
- native hedgerow;
- ponds / waterbodies; and
- species-rich grassland.

Plate 4.1: Proposed oLEMP Habitat Typology – Overview

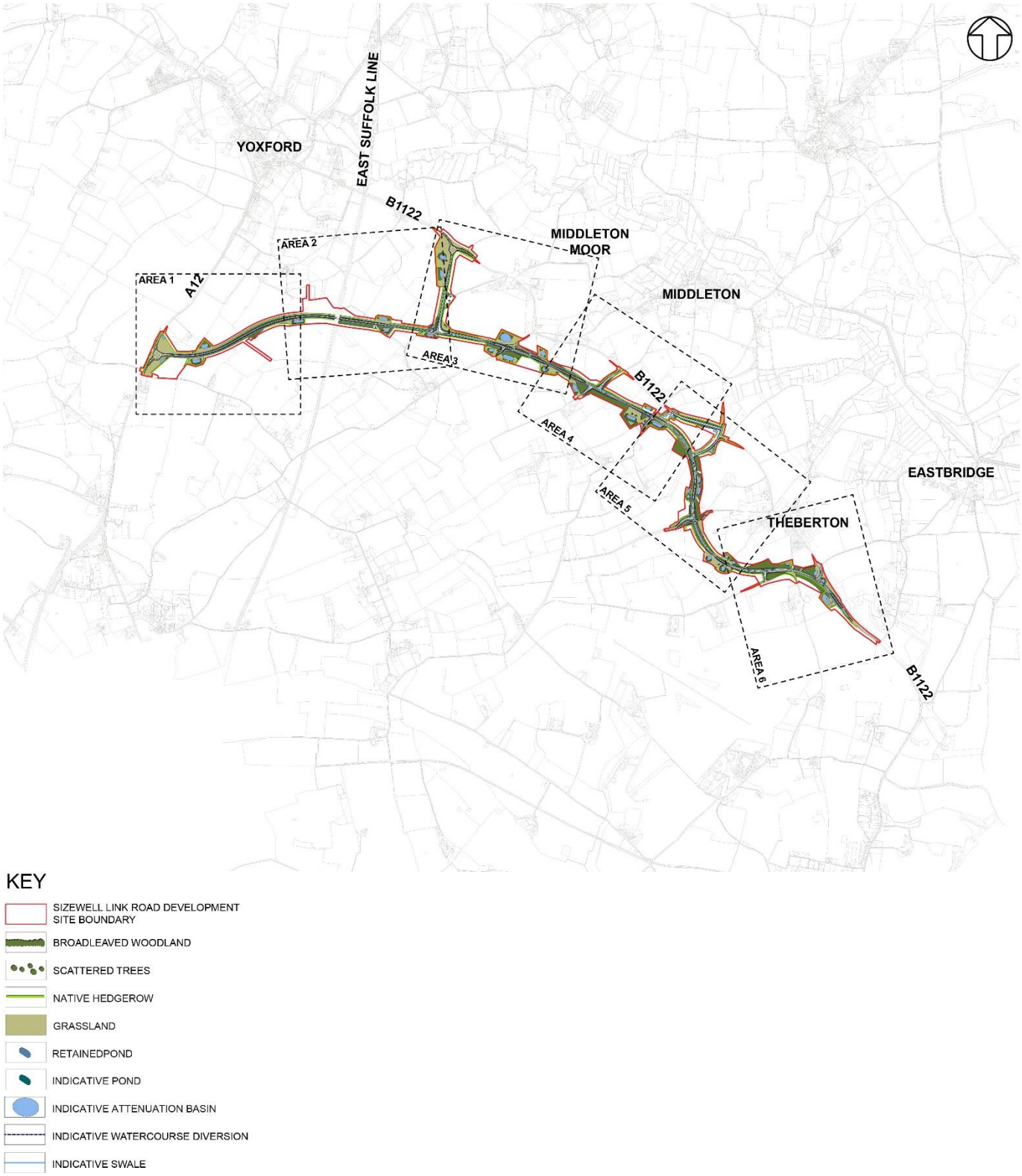

Plate 4.2: Proposed oLEMP Habitat Typology – Area 1

Plate 4.3: Proposed oLEMP Habitat Typology – Area 2

Plate 4.4: Proposed oLEMP Habitat Typology – Area 3

Plate 4.5: Proposed oLEMP Habitat Typology – Area 4

Plate 4.6: Proposed oLEMP Habitat Typology – Area 5

Plate 4.7: Proposed oLEMP Habitat Typology – Area 6

4.3 Habitat Types

a) Arable Farmland

4.3.1 Areas subject to temporary possession would be restored back to arable agriculture, where that is the current land use. These fields would revert back to and continue to be managed by the landowner as they are at present with field margins being retained and are therefore not the focus of this **oLEMP**.

b) Broadleaved Woodland

4.3.2 New areas of woodland would be established through planting. The new woodland would buffer and link existing areas of woodland within the site, as well as provide visual screening, and would be predominantly native broadleaved with a small component of mixed woodland (to increase climate change resilience). It would have structural and species diversity, and management would be aimed at enhancing biodiversity value rather than commercial timber management.

c) Scattered Trees

4.3.3 New areas of scattered trees are proposed around some road junctions and infiltration basins in order to provide a transition between broadleaved woodland and grassland. The trees would be native broadleaved, with species diversity, and management would be aimed at enhancing biodiversity value.

d) Native Hedgerows

4.3.4 New and replacement hedgerows would be created along much of the route of Sizewell link road, to provide landscape integration and habitat linkages. Hedgerows would contain native species and be species rich.

e) Grassland

4.3.5 Following completion of construction, the majority of the post-construction area would be seeded to provide species-rich neutral grassland. There would be different end use requirements dependant on specific locations of the grassland e.g. around infiltration basins and swales or at created ponds. The grassland would comprise a native species mix including the following grass species: Crested Dog's-tail (*Cynosurus cristatus*), Quaking-grass (*Briza media*), Sweet Vernal-grass (*Anthoxanthum odoratum*), Yellow Oat-grass (*Trisetum flavescens*), Red Fescue (*Festuca rubra*) and Common Bent (*Agrostis capillaris*). Forb species would include the following: Common Knapweed (*Centaurea nigra*) Oxeye Daisy (*Leucanthemum vulgare*), Common Bird's-foot-trefoil, Lady's Bedstraw (*Galium verum*),

Common Sorrel (*Rumex acetosa*), Meadow Vetchling (*Lathyrus pratensis*), Meadow Buttercup, Ribwort Plantain (*Plantago lanceolata*), Cowslip (*Primula veris*) and Cat's-ear (*Hypochaeris radicata*).

f) Ponds

4.3.6 A total of up to eight mitigation ponds would be provided to provide new breeding habitats for great crested newts (**Volume 3**, **Appendix 2.9.C** of the **ES Addendum**), whilst a further six ponds are to be created which will function as an enhancement of the aquatic habitats within the site post development.

5 MANAGEMENT PROPOSALS

5.1 Overview

5.1.1 **Table 5.1** sets out an overview of the construction phase and pre-establishment management proposals. **Table 5.2** sets out the management proposals for habitats that would be created. **Table 5.3** sets out faunal enhancement management outline proposals.

5.1.2 Establishment and aftercare works are to be carried out by an approved landscape sub-contractor in accordance with good horticultural practice and the relevant British standards at the time of implementation.

5.2 Ground preparation and soil management

5.2.1 The availability of soil resources in the right condition would be critical to the establishment of the required habitats. Topsoil and subsoil would be stripped and stockpiled (separately) on site so that it is available for reinstatement.

5.2.2 All soils would be handled in accordance with the **Outline Soil Management Plan** (**Volume 2**, **Chapter 17**, **Appendix 17C** of the **ES**) (Doc Ref 6.3) [APP-278], with a detailed soil resource plan to be prepared for the site by the contractor at a later date. This would set out the ways in which soils would be stripped, transported, stockpiled and restored, with a reconditioning step detailed should it be required. These would follow published best practice guidance and ensure that reinstated soils have the right physical and chemical characteristics for their required end use.

5.2.3 Soil materials with different characteristics would be stockpiled separately. This would ensure that the soil types which support the different habitats can be recreated in the required locations.

5.2.4 The requirements and methods for habitat creation would be included in dedicated habitat creation method statements.

Table 5.1: Construction phase outline proposals

Management Item Reference	Management Item	Proposed Management	Timeframe/Frequency on Management Actions
Watering			
W1	Planting and seeding	Planting should be aligned with appropriate seasons (spring and late autumn) to reduce the requirement for watering. The Contractor shall monitor watering requirements all new seeding and planting until all establishment works are completed. Any losses are to be replanted in the next dormant season.	As required
Use of Herbicides and Fertilisers			
HF1	Herbicides and fertilisers	Following reinstatement, herbicides or fertilisers shall not be used for any maintenance or management operations that may cause harm to existing land uses (i.e. publicly accessible areas, or agricultural areas) or existing habitats.	Following reinstatement

Table 5.2: Proposed management outline proposals for newly created habitats

Management Item Reference	Management Item	Proposed Management	Timeframe/Frequency on Management Actions
Weed Control			

Management Item Reference	Management Item	Proposed Management	Timeframe/Frequency on Management Actions
WC1	Injurious weeds	Weed control relates to infestations of injurious weeds as follows: Broad-leaved Dock (*Rumex obtusifolius*), Curled Dock (*Rumex crispus*), Common Ragwort (*Senecio jacobaea*), Creeping Thistle (*Cirsium arvense*) and Spear Thistle (*Cirsium vulgare*). Injurious weed control would use mechanical means of control such as topping or pulling where appropriate. In the event that these injurious weeds are found on site, specialist advice would be sought for any occurrences of invasive species, including Giant Hogweed (*Heracleum mantegazzianum*) and Japanese Knotweed (*Fallopia japonica*).	March-October As required
WC2	Invasive species	In the event that species listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) are found on site during the monitoring, an invasive weeds specialist should develop an Invasive Species Management Plan to specify the treatment methods and measures to prevent the spread of these species.	March-October As required
WC3	Herbicide application	Where weed killing is by a selective translocated herbicide, the herbicide shall be applied during a period of active growth in accordance with the manufacturer's instructions. Weed-killing shall be achieved by the total die-back of weeds. In the case of selective weed control there shall be not more than 5% re-growth during the season.	March-October As required

Management Item Reference	Management Item	Proposed Management	Timeframe/Frequency on Management Actions
WC4	Herbicide application	Where weed control is by spot application, a translocated herbicide shall be applied with a device that ensures that the herbicide touches weed species only.	March-October As required
WC5	Removal of weeds by hand	Where weed control by pulling/hand-weeding, the work shall consist of the removal of the entire weed, including roots, by digging, forking, hoeing or pulling. Weeds shall be removed prior to flowering and the arisings removed from site.	March-October As required
Broadleaved Woodland			
BW1	Planting	Planting would be undertaken in the dormant season (November to February) in random single species groups of 5 – 20 plants at centres varying between 1.4 –2.5m, to avoid excessive overcrowding and shading out problems. Planting shall be done on a ratio of roughly 40% to 50% canopy trees, 20% to 30% understorey trees and scrub, and c.30% open space. The larger blocks of woodland planting will be protected by installing deer fencing (rather than individual tree guards). The height of the fencing should be a minimum of 1.8m. Tree guards will be used for smaller areas of woodland.	Construction Phase November to February

Management Item Reference	Management Item	Proposed Management	Timeframe/Frequency on Management Actions
		Any stakes, guards and ties are to be monitored, replaced and adjusted to ensure tree growth is not adversely affected.	
BW2	Tree replacement	Any trees that fail or become damaged or diseased shall be removed and replaced in the next planting season with others of similar size and species.	To be undertaken in planting season - November to February As required
BW3	Weeding	All weed growth shall be controlled using mechanical means, such as strimming. Chemical treatments are to be used only as a last resort and should not be used in areas accessible to the public.	May-October As required
Scattered Trees			
ST1	Planting	Planting would be undertaken in the dormant season (November to February) in random single species groups of 3 - 5. Tree guards will be used for individual trees. Any stakes, guards and ties are to be monitored, replaced and adjusted to ensure tree growth is not adversely affected.	Construction Phase November to February
ST2	Tree replacement	Any trees that fail or become damaged or diseased shall be removed and replaced in the next planting season with others of similar size and species.	To be undertaken in planting season - November to February As required

Management Item Reference	Management Item	Proposed Management	Timeframe/Frequency on Management Actions
ST3	Weeding	All weed growth shall be controlled using mechanical means, such as strimming. Chemical treatments are to be used only as a last resort and should not be used in areas accessible to the public.	May-October As required
Native Hedgerows			
H1	Planting	Planting of whips would be undertaken in the dormant season (November to February). Whips should be planted in double rows at a spacing of 20—30cm. Any stakes, guards and ties are to be monitored, replaced and adjusted to ensure hedgerow growth is not adversely affected.	Construction Phase November to February
H2	Hedgerow replacement planting	Any sections of hedgerows that fail or become damaged or diseased shall be removed and replaced in the next planting season with similar species.	To be undertaken in planting season - November to February One per annum
H3	Hedgerow margins	Hedgerow margins of a minimum 2m are to be left undisturbed. The margins should be cut either annually or bi-annually in late summer, after the flowers have seeded.	Main cut late Summer (late July/early August) One per annum
Grassland			

Management Item Reference	Management Item	Proposed Management	Timeframe/Frequency on Management Actions
G1	Grass cutting	To be determined based on final specified grassland mixes.	To be based on specified grassland mixes.
G2	Scrub removal	Unless required for screening, or where it provides a boundary habitat, or is developing into desirable areas of scrub, scrub shall be managed and should only be removed outside the breeding bird season to retain an open grassland sward and maintain the grassland and scrub mosaics.	September to February inclusive One per annum
Ponds			
P1	All measures	Great Crested Newt mitigation ponds: The specification for and management of great crested newt mitigation ponds will be set out in the relevant licence application (see also FE4 below)	TBC
P2	Water depth management	Monitor water and silt levels in June Top up using non-chlorinated/untreated water as required to ensure depth of ca. 50% of planned maximum. Undertake general aquatic vegetation removal in December-January to maintain silt level below 500mm from original pond base	December-January One per annum.

Management Item Reference	Management Item	Proposed Management	Timeframe/Frequency on Management Actions
P3	Vegetation Removal	Monitor balance of open water to aquatic/marginal vegetation in June every 2 years. Undertake clearance of vegetation on a rotational basis (5-7 years or as required) Removal of vegetation to be undertaken/supervised in December-January.	December-January As required.
P4	Scrub removal	Monitor scrub encroachment around banks in June. Ensure scrub does not dominate and shade pond. Cut scrub back in November to ensure shading of pond is less than 25%.	Every 2 years
P5	Pollution	Ensure pond is not degraded through pollution. Monitor for signs of eutrophication (algal blooms) or vegetation.	As required.
P6	Non-native species management	Inspect ponds for invasive aquatic species; Do not transfer water/sediment/vegetation from other waterbodies. Removal of non-native aquatic vegetation to be immediately undertaken if noted.	As required.

Table 5.3: Faunal enhancement management outline proposals

Management Item Reference	Management Item	Proposed Management	Timeframe/Frequency on Management Actions
FE1	Reptile hibernacula	No maintenance is required for the hibernacula, but if the structure is no longer suitable for wildlife (i.e. collapsed such that there are no longer cavities) then replace like for like.	One check per annum
FE2	Reptile egg laying	No maintenance is required for the reptile egg laying sites, but if the structure is no longer suitable for wildlife (i.e. collapsed such that there are no longer cavities) then replace like for like.	One check per annum
FE3	Bat boxes	Any lost or damaged bat boxes to be replaced once they have been checked by a licenced bat worker to ensure that no bats are present.	As required
FE4	Great crested newts	Management for great crested newt mitigation, and any relevant habitat enhancements, will be described in detail in the great crested newt license application.	As required

6 MONITORING REQUIREMENTS

6.1 General Monitoring

6.1.1 During the short-term (initial establishment) period which is likely to be twelve months from completion of construction, inspections shall take place by a suitably qualified specialist biannually in spring and late summer. After the first twelve months inspections would be carried out annually in late summer, until adoption of the scheme by the Highways Authority. These monitoring inspections will be used to measure the success of the management proposals and determine if interventions are required in order to deliver the landscape and ecology vision. Monitoring proposals are detailed in **Table 6.1**, however specific detailed monitoring prescriptions will be detailed in a Monitoring Strategy produced by the contractor as part of the detailed design.

Table 6.1: Monitoring proposals

Habitat / Feature Type	Party responsible	Timing of Monitoring	Requirements
Establishment	SZC Co. will be responsible for a total of 5 years from completion of works or until adoption by Highways Authority	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 LEMP 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.

Habitat / Feature Type	Party responsible	Timing of Monitoring	Requirements
			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. will be responsible for a total of 5 years from completion of works or until adoption by Highways Authority	Check bi-annually 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 6, Appendix 7A.4**) [APP-462]. 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
Woodland	SZC Co. will be responsible for a total of 5 years from completion of works or until adoption by Highways Authority	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, at least one per annum, 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. This would weight desirable species against the injurious ones.
Scattered Trees	SZC Co. will be responsible for a total of 5 years from completion of works or until adoption by Highways Authority	As above	Regular checks, at least one per annum, 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.
Hedgerows	SZC Co. for 5 years until adoption by	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.

Habitat / Feature Type	Party responsible	Timing of Monitoring	Requirements
	Highways Authority		Regular checks, at least one per annum, 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.
Grassland	SZC Co. will be responsible for a total of 5 years from completion of works or until adoption by Highways Authority	As above	Regular checks, at least one per annum, 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. 1.5)/Suffolk Biodiversity Action Plan (Ref. 1.6) as well as the Joint Nature Conservation Committee guidance. Monitoring would follow the Common Standards Monitoring Guidance for Lowland Grassland. This would weight desirable species against the injurious ones.
Ponds	SZC Co. will be responsible for a total of 5 years from completion of works or until adoption by	As above	Regular checks, at least one per annum, of the newly established ponds shall be made during the first five years of establishment. Targets would be set for ponds according thresholds identified for Section 41 of the Natural Environment and Rural Communities (NERC)

Habitat / Feature Type	Party responsible	Timing of Monitoring	Requirements
	Highways Authority		Act (Ref. 1.5)/Suffolk Biodiversity Action Plan (Ref. 1.6) as well as the Joint Nature Conservation Committee guidance.
Year five survey and review	SZC Co.	Year 5	The following surveys, at a minimum, shall be included in the year five review: 1 protected species surveys; 2 monitoring surveys of bat and bird boxes; and 3 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, upon which the Highways Authority will adopt the scheme.

REFERENCES

1. Natural England (2015) NE491: NCA Profile: 82 Suffolk Coast and Heaths (online) http://publications.naturalengland.org.uk/publication/5626055104659456 (Accessed 25 September 2020).

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3. Suffolk County Council (2008, revised 2011) Suffolk Landscape Character Assessment (online) http://www.suffolklandscape.org.uk/ (Accessed 25 September 2020).

4. Joint Nature Conservation Committee Handbook for Phase 1 habitat survey: a technique for environmental audit. Peterborough: JNCC, 2010.

5. Natural Environment and Rural Communities Act. 2006. (Online). Available from: http://www.legislation.gov.uk/ukpga/2006/16/contents (Accessed 25 September 2020).

6. Suffolk Biodiversity Information Service. Priority Species and Habitats. 2015 (Online) Available from: https://www.suffolkbis.org.uk/biodiversity/speciesandhabitats (Accessed 25 September 2020).