The Sizewell C Project

SZC Co.'s Response to the Secretary of State's Request for Further Information dated 31 March 2022: Appendix 6 - Sizewell Link Road Landscape and Ecology Management Plan (clean version), submitted in response to Question 8.3

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EXECUTIVE SUMMARY

This **Sizewell link road Landscape and Ecology Management Plan** (**LEMP**) (Doc Ref. 10.27) provides clear objectives and principles for the establishment and long - term management of the landscape and ecological mitigation identified for the soft estate within the Sizewell link road site (hereafter referred to as the 'site'), following construction of the Sizewell link road. The spatial extent of the **LEMP** (Doc Ref. 10.27) is the same as the area within the **Illustrative Masterplan** provided at **Figures 4.2.2** to **4.2.8** within **Volume 2**, **Chapter 4** of the **Second Environmental Statement Addendum** [REP5-068] as amended by the reduction in the site boundary shown on **Figure 2.4** at **Volume 2** of the **Fifth Environmental Statement Addendum** [REP8-073]. The aim of the **LEMP** 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 practicable, existing landscape features of importance for ecology and visual screening will be retained during construction.

New habitats will contribute to enhancing the landscape character of this section of the Ancient Estate Claylands and Rolling Estate Claylands. They will 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 of the habitats that will be created are set out within this document including time frames.

Monitoring of post-construction and existing habitats must be undertaken to measure the success of the habitat establishment and subsequent management proposals and to determine if interventions are required.

Following questions received from the Secretary of State dated 31 March 2022, Appendix A has been added to this **LEMP**, which provides further detail on the mitigation and compensation proposals in relation to watercourse crossings.

1 INTRODUCTION

1.1.1 This **Sizewell link road LEMP** provides clear objectives and general principles for the establishment and longer-term management of the landscape, and ecological mitigation identified for the area within the Sizewell link road site (hereafter referred to as the 'site'), following construction of the Sizewell link road. The spatial extent of the **LEMP** is the same as the area covered by the **Illustrative Masterplan** provided at **Figures 4.2.2** to **4.2.8** within **Volume 2**, **Chapter 4** of the **Second Environmental Statement (ES) Addendum** [REP5-068] as amended by the reduction in the site boundary shown on **Figure 2.4** at **Volume 2** of the **Fifth Environmental Statement Addendum** [REP8-073].

1.1.2 The aim of the **LEMP** 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 overarching objective of the **LEMP** is to set out how the habitats to be established within along Sizewell link road must 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.

1.1.4 The **LEMP** must be reviewed throughout the detailed design process to ensure it continues to reflect the details of the target communities identified. Details of how the implementation of the **LEMP** must be monitored are set out in section 6.

1.1.5 Detailed landscape schemes will be submitted pursuant to Requirement 22A before the Sizewell link road is commenced. The landscape scheme must then be managed in accordance with this **LEMP** unless otherwise agreed by ESC pursuant to Requirement 22A of the dDCO. The first five years of management are critical to the establishment of the landscape. Any agreements with the Highway Authority under Article 21 of the dDCO for adopting the highway will include landscape and ecology management obligations.

1.1.6 Detailed descriptions of the proposed development and the different phases of development are provided in the amended version of **Volume 6**, **Chapter 2** of the **ES** [REP5-058].

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

- **Code of Construction Practice** (CoCP) (Doc Ref. 10.2);
- **Associated Development Design Principles** (Doc Ref. 10.1);

- **Sizewell Link Road Plans – Plans for Approval: Sizewell Link Road Proposed Landscape Masterplan and Finished Levels** – Key Plan and Sheets 1 to 4 [REP8-029];

- A draft protected species licence for great crested newt [REP7-026 and REP7-026a] and bats [REP7-080] and non-licensable method statements for bats and reptiles, as appended to the **CoCP** (Doc Ref. 10.2).

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

1.1.9 This **LEMP** is a Level 1 document and must be complied with through the construction in the management of the Sizewell link road unless otherwise agreed with East Suffolk Council. This is secured by Requirement 22A(5) of the **DCO**. Any updates to this document must be approved by the East Suffolk Council in accordance with the procedure set out in Schedule 23 of the DCO. This **LEMP** requires further documents to be submitted for approval at particular stages of the Sizewell C Project:

- Habitat creation method statements (to East Suffolk Council)

- Monitoring strategy (to the Ecology Working Group)

1.1.10 Where further documents or details require approval, this document states which body or governance group is responsible for the approval and/or must be consulted. Any approvals by East Suffolk Council or Suffolk County Council will be carried out in accordance with the procedure in Schedule 23 of the DCO. The DoO establishes the governance groups and sets out how these governance groups will run and, where appropriate, how decisions (including approvals) should be made. Any updates to these further documents or details must be approved by the same body or governance group and through the same consultation and procedure as the original document or details.

1.1.11 Where separate Level 1 or Level 2 control documents include measures that are relevant to the measures within this document, those measures have not been duplicated in this document, but cross-references have been included for context. Where separate legislation, consents, permits and licences are described in this document they are set out in the **Schedule of Other Consents, Licences and Agreements** (Doc Ref. 5.11(C)).

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

1.1.13 Following questions received from the Secretary of State dated 31 March 2022, Appendix A has been added to this **LEMP**, which provides further detail on the mitigation and compensation proposals in relation to watercourse crossings.

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 **LEMP**;
- **Section 5:** sets out management prescriptions per habitat type; and
- **Section 6:** sets out monitoring requirements per habitat type.

2.1.2 In addition to the above, this **LEMP** is supported by **Figures 1** and **2.** These figures appeared originally 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] but have been updated in this LEMP to reflect the current proposals. **Figures 3** to **10** 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 are 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.

3.1.17 Further contextual information about the terrestrial ecology baseline can be found in **Volume 6**, **Chapter 7** [APP-461] and **Volume 6**, **Chapter 7**, **Appendix 7A** [APP-462] of the **Environmental Statement**. Additional ecology reports relevant to the Sizewell link road include:

- **2020 Sizewell Link Road Survey Report** [AS-036]
- **Bat Roost Surveys in Trees - Associated Development Sites** [REP2-121];
- **Associated Development Site Great Crested Newt Survey Report** [REP7-027];
- **Bat Crossing Point Survey Report 1** [REP7-027]; and
- **Bat Crossing Point Survey Report 2** [REP9-004].

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.

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

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**.

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	Medium textured clay loams overlying heavy textured clays or lightly textured

Area	Location	Description of soil texture
	B1122 adjacent to Brown's Plantation.	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 principles for the development as articulated in the **Associated Development Design Principles (Doc. Ref. 10.1)**.

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

4.1.3 Given the scale of development, construction will 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 will 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 must 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 to be created east of the East Suffolk Line, in the vicinity of the existing

Fordley Road, in the vicinity of Trust Farm, and linking Plumtreehills Covert to Pretty Road.

- Provide replacement ponds to compensate for the temporary and permanent loss of great crested newt breeding ponds and for woodland planting, hedgerow planting and grassland planting to replace lost terrestrial habitats and to improve connectivity for this species.
- To provide enhancement ponds to provide additional pond habitats in the area and to enhance retained watercourses within order limits to 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 will provide long-term benefits to biodiversity of Suffolk as a whole rather than at a site level.

4.2 Habitat Types - Overview

4.2.1 This **Sizewell link road LEMP** provides management and monitoring specifications for the following broad landscape types that are to be created, enhanced or restored following completion of construction within the development site boundary. **Figures 3** to **9** illustrate the habitat types that will be created on the post-construction site within the site boundary, and which are covered by this **Sizewell link road LEMP**. The habitat types are as follows:

- arable farmland;
- broadleaved woodland;
- scattered/specimen trees;

- native hedgerows;
- species-rich grassland;
- ponds / waterbodies; and
- watercourses.

4.3 Habitat Types

a) Arable Farmland

4.3.1 Where the current land use is arable agriculture, areas subject to temporary possession must be restored back to a condition suitable for agricultural use. These fields therefore 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 **LEMP**.

b) Broadleaved Woodland

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

c) Scattered Trees

4.3.3 New areas of scattered trees must be planted around road junctions and infiltration basins in order to provide a transition between broadleaved woodland and grassland, unless visibility splays for the junctions or maintenance access requirements for the basins prevent their planting. The trees must be native broadleaved, with species diversity, and management must be aimed at enhancing biodiversity value.

d) Specimen Trees

4.3.4 Existing individual specimen trees, particularly veteran or ancient trees, must be retained wherever practicable. Planting of individual specimen trees must be undertaken in the vicinity of veteran or ancient trees that will be lost as part of the construction, unless veteranisation of existing nearby trees is possible. These trees must be of the same species as the veteran or ancient tree lost, and of local provenance where possible. Management

must be aimed at allowing these specimen trees to develop an open crown that could mature into a veteran or ancient tree over time.

4.3.5 Bat 'hop-overs' will be created using retained mature vegetation and / or transplanted specimen trees. This approach has the best opportunity of permitting safe passage across the road for bats at the earliest opportunity. These 'hop-overs' will be linked into existing retained and newly proposed hedgerows and new woodlands as much as is possible.

4.3.6 Planting/transplanting methods and design will need to be agreed with the highway authority but will be focussed on the key locations identified on **Figure 10**. An image of a crossing point on the existing B1122, with tall vegetation is presented as below in **Error! Reference source not found.**.

Image 1: An example of a hop-over formed of tall vegetation across the existing B1122

4.3.7 Surveys have been conducted across the Sizewell link road site to identify areas which are likely to require mitigation to facilitate road crossing by bats. Fourteen locations where vegetation or features that have potential be used by commuting bats were identified from aerial imagery, these are presented in **Figure 10**. Of the 14 locations investigated (numbered 10 – 23), the following six locations met the threshold to *potentially* require a 'hop-over': 11, 12, 13, 20, 21 and 22. The locations of these is presented in **Figure 10**. Whether these six locations require a 'hop-over' is being clarified by further surveys.

e) Native Hedgerows

4.3.8 New and replacement hedgerows must be created along much of the route of Sizewell link road, to provide landscape integration and habitat linkages. Hedgerows must contain native species, including a proportion of tree species, and be species rich.

f) Grassland

4.3.9 Following completion of construction, the majority of the post-construction area must be seeded to provide species-rich neutral grassland. There will 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 must 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 must 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*).

g) Ponds

4.3.10 A total of up to eight mitigation ponds must be provided to provide new breeding habitats for great crested newts (**Volume 3**, **Appendix 2.9.C** of the **ES Addendum** [AS-209]), whilst a further six ponds must be created to function as an enhancement of the aquatic habitats within the site post development.

h) Watercourses

4.3.11 Enhancement of existing watercourses within the extent of land which forms the permanent land take for the Sizewell link road will be undertaken (approximately 50m upstream and downstream of the proposed new culverts). In addition, enhancement measures will be incorporated within the three watercourse diversions (Middleton Drain, Pretty Road Drain watercourse diversion west to Pretty Road and Pretty Road Drain watercourse diversion east to Theberton watercourse) and new wetland habitat, such as a scrape, incorporated into the Middleton Drain.

4.3.12 The enhancements will create greater diversity of habitats along the watercourse diversions comprising variations in plan form (to include sinuosity), channel width, bank form and flow conditions. Further detail can be found in the 'Sizewell Link Road – Watercourse Crossings Mitigation

Note' attached at Appendix A. This note was also submitted as Appendix C to Document Ref 9.63 Comments at Deadline 6 on Submissions from Earlier Submissions and Subsequent Written Submissions to ISH1-ISH6 [REP6-025 & REP6-024] (Ref. 1.5).

4.3.13 These enhancements will include, but not be limited to:

- Creating a sinuous channel to maximise channel length (both within a single-stage channel and within a 2-stage channel);
- Varying channel form, width and bank gradient, where possible creating a 2-stage channel where low flows are confined to a small, shallow channel and flood flows are allowed to spill out into the 2nd stage channel across berms (with lateral flow potential enhanced through the use of leaky woody dams);
- Creation of irregular pools of varying depth to create habitat mosaics across deeper, stiller water and faster flowing shallow water over coarser substrates;
- Backwaters and side channels (which could be created with a 2-stage channel design or created off-line); and
- Woody leaky dams and other natural obstructions, where tree trunks generated within the project are fixed into the watercourse bank to promote flow variations within the channel or promote out of bank flow across berms / within a 2-stage channel.

4.3.14 The strategy for the management of surface runoff associated with the Sizewell link road will be storage and attenuation using SuDS techniques where practicable, with discharge to local watercourses.

4.3.15 The SuDS features will include swales and attenuation basins which will be designed to maximise their biodiversity value within any limits posed by their drainage / attenuation requirements. For example, and where practicable, attenuation basins will comprise both open water and marginal vegetation, with banks created using low nutrient soil materials to support the establishment and growth of species-rich habitats. The creation of species-rich habitats on the green areas bordering swales should also be incorporated into the designs.

5 MANAGEMENT PROPOSALS

5.1 Overview

5.1.1 **Table 5.1** sets out the construction phase and pre-establishment management measures. **Table 5.2** sets out the management measures for

habitats that will be created. **Table 5.3** sets out faunal enhancement management measures.

5.1.2 Establishment and aftercare works must 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.

5.1.3 Management procedures must be reviewed annually to ensure management is aligned with habitat creation.

5.2 Ground preparation and soil management

5.2.1 The availability of soil resources in the right condition is critical to the establishment of the required habitats.

5.2.2 All soils would be handled in accordance with the measures set out in section 9, Part C the **Code of Construction Practice** (Doc Ref. 10.2) (Requirement 2) and the Soil Management Plan once it has been approved by East Suffolk Council (required under the CoCP). This sets out the ways in which soils must be stripped, transported, stockpiled and restored, with a reconditioning step detailed. These 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 The requirements and methods for habitat creation must be included in a dedicated habitat creation method statement. The method statement must include acceptance criteria for the soils required for each habitat type and be submitted to East Suffolk Council for approval in accordance with the procedure set out in Schedule 23 of the DCO prior to works commencing.

Table 5.1: Establishment phase management

Management Item Reference	Management Item	Management measures	Timeframe/Frequency on Management Actions
Watering			
W1	Planting and seeding	Planting must be aligned with appropriate seasons (spring and late autumn) to reduce the requirement for watering. Watering requirements for all new seeding and planting must be monitored 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 must 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: Management measures for newly created habitats

Management Item Reference	Management Item	Management measures	Timeframe/Frequency on Management Actions

Management Item Reference	Management Item	Management measures	Timeframe/Frequency on Management Actions
Weed Control			
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 must use mechanical means of control such as topping or pulling. In the event that these injurious weeds are found on site, specialist advice must 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, treatment methods and measures to prevent the spread of these species must be implemented.	March-October As required
WC3	Herbicide application	Where weed killing is by a selective translocated herbicide, the herbicide must be applied during a period of active growth in accordance with the manufacturer's instructions. Weed-killing will be achieved by the total die-back of weeds. In the case of selective weed control there must be not more than 5% re-growth during the season.	March-October As required
WC4	Herbicide application	Where weed control is by spot application, a translocated herbicide must be applied with a device that ensures that the herbicide touches weed species only.	March-October As required

Management Item Reference	Management Item	Management measures	Timeframe/Frequency on Management Actions
WC5	Removal of weeds by hand	Where weed control by pulling/hand-weeding, the work must consist of the removal of the entire weed, including roots, by digging, forking, hoeing or pulling. Weeds must be removed prior to flowering and the arisings removed from site.	March-October As required
Broadleaved Woodland			
BW1	Tree replacement	Any trees that fail or become damaged or diseased must be removed and replaced in the next planting season with others of similar size and species. Planting must 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 must 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 must be protected by installing deer fencing (rather than individual tree guards). The height of the fencing must be a minimum of 1.8m. Tree guards must be used for smaller areas of woodland. Any stakes, guards and ties must be monitored, replaced and adjusted to ensure tree growth is not adversely affected.	To be undertaken in planting season - November to February As required
BW2	Weeding	All weed growth must be controlled using mechanical means, such as strimming.	May-October

Management Item Reference	Management Item	Management measures	Timeframe/Frequency on Management Actions
		Chemical treatments must only be used as a last resort and must not be used in areas accessible to the public.	As required
Scattered/Specimen Trees			
ST1	Planting	Planting must be undertaken in the dormant season (November to February) in random single species groups of 3 - 5. Tree guards must be used for individual trees. Any stakes, guards and ties must 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 must 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
ST3	Weeding	All weed growth must be controlled using mechanical means, such as strimming. Chemical treatments must only be used as a last resort and must not be used in areas accessible to the public.	May-October As required
ST4	Bat hop-overs -	Trees used for these features must be inspected annually after installation. If trees have	Annually

Management Item Reference	Management Item	Management measures	Timeframe/Frequency on Management Actions
	replacement of failed planted and transplanted trees	failed a suitable replacement (of an appropriate size and species) must be planted. All other Maintenance recommendations are as per other scattered / Specimen trees and should follow ST1 -3 above.	
Native Hedgerows			
H1	Hedgerow replacement planting	Any sections of hedgerows that fail or become damaged or diseased must be removed and replaced in the next planting season with similar species. Planting of whips must be undertaken in the dormant season (November to February). Whips must be planted in double rows at a spacing of 20—30cm. Any stakes, guards and ties must be monitored, replaced and adjusted to ensure hedgerow growth is not adversely affected.	To be undertaken in planting season - November to February One per annum
H2	Hedgerow margins	Hedgerow margins of a minimum 2m must be left undisturbed. The margins must be cut 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	Management measures	Timeframe/Frequency on Management Actions
G1	Grass cutting	To be determined as part of detailed design based on final specified grassland mixes.	To be based on specified grassland mixes.
G2	Scrub removal	Where required, scrub will be managed or removed outside the breeding bird season to promote an open grassland sward. Scrub will not be removed where it is required for screening, or where it provides a boundary habitat.	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 submitted to Natural England. (see also FE4 below)	TBC
P2	Water depth management	Water levels to be topped up using non-chlorinated/untreated water as required to ensure depth of ca. 50% of planned maximum depth during the establishment period to ensure successful establishment of planned habitats. General aquatic vegetation removal must be undertaken in December-January to maintain silt level below 500mm from original pond base.	December-January One per annum (during the establishment period only for topping up water levels, if required).

Management Item Reference	Management Item	Management measures	Timeframe/Frequency on Management Actions
P3	Vegetation Removal	The balance of open water to aquatic/marginal vegetation must be monitored in June every 2 years. Clearance of vegetation must be undertaken on a rotational basis (5-7 years or as required). Removal of vegetation must be undertaken in December-January annually.	December-January As required.
P4	Scrub removal	Scrub encroachment around banks must be monitored in June every 2 years to ensure scrub does not dominate and shade pond. Scrub must be cut back in November every 2 years to ensure shading of pond is less than 25%.	Every 2 years
P5	Pollution	Monitor for signs of eutrophication or poor water quality (for example resulting from pollution). Should signs of poor water quality be noted remedial measures to be identified and implemented.	Every 2 years (as part of other maintenance operations)
P6	Non-native species management	Ponds must be inspected for invasive aquatic species. Water/sediment/vegetation must not be transferred from other waterbodies. Non-native aquatic vegetation must be removed immediately if noted.	As required.
Watercourses			
W1	Watercourse	Watercourses will be slubbed as required, based on the outcomes from monitoring visits.	September-February

Management Item Reference	Management Item	Management measures	Timeframe/Frequency on Management Actions
	management	Slubbing will be undertaken where monitoring identifies that vegetation growth is limiting one or more functions of the watercourse, for example drainage capacity/capability or reduced light / flow for rarer or more specialised plants, as well as if non-native invasive species have established. Watercourses will be slubbed no more frequently than once every 5 years, between mid-September and the end of February to avoid breeding birds unless other ecological mitigation measures have been agreed with the Ecology Working Group. Only short lengths of watercourses must be slubbed rather than whole watercourse lengths (with no more than 50% of vegetation removed during any one clearance). Multiple sides of a ditch must not be slubbed at the same time. Scrub must be managed to ensure it does not encroach on ditches to prevent over-shading.	One per annum

Table 5.3: Faunal enhancement management measures

Management Item Reference	Management Item	Management measure	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 it must be replaced to the same specification.	One check per annum

Management Item Reference	Management Item	Management measure	Timeframe/Frequency on Management Actions
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 it must be replaced to the same specification.	One check per annum
FE3	Bat boxes	Any lost or damaged bat boxes must 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 submitted to Natural England.	As required

Table 5.4: Other features management measures

Management Item Reference	Management Item	Management measures	Timeframe/Frequency on Management Actions
OF1	Acoustic barriers (bunds or fences)	Retention of bund crests at their designed height and across their design footprint, and making good of any cracks, splits or other holes through any acoustic fences, including at the base.	To be undertaken throughout the period of the construction of the Sizewell C project. Inspections to be carried

Management Item Reference	Management Item	Management measures	Timeframe/Frequency on Management Actions
			out at least every two years unless agreed otherwise.
OF2	Highway fencing	Highway boundary fencing will guide protected species to purpose-built mitigation/ safe crossing points along the scheme corridor. The highway boundary fencing shall be constructed in accordance with the Manual of Contract Documents for Highways Works.	Fencing inspections shall be carried out bi-annually. Any defects or failures shall be corrected immediately. The Contractor shall be responsible for the maintaining and repairing for fencing over the course of the aftercare/ defects period. Upon completion of the defects/ aftercare period, responsibilities of monitoring and maintenance of the highway boundary fencing shall be with the operational phase

Management Item Reference	Management Item	Management measures	Timeframe/Frequency on Management Actions
			managing agent.

6 MONITORING REQUIREMENTS

6.1 General Monitoring

6.1.1 During the initial establishment period of twelve months from completion of construction of the Sizewell link road, inspections must take place by a suitably qualified specialist biannually in spring and late summer. After the first twelve months inspections must be carried out annually in late summer, unless otherwise agreed with East Suffolk Council. Any Article 21 agreements with the Highway Authority will include any appropriate monitoring obligations for the highway which is being adopted. These monitoring inspections will be used to measure the success of the management measures and determine if interventions are required in order to deliver the landscape and ecology vision.

6.1.2 The monitoring requirements are set out in **Table 6.1**, however specific detailed monitoring prescriptions will be detailed in a Monitoring Strategy for the established habitats which will be submitted to and approved by the Ecology Working Group. All monitoring must be reported to the Ecology Working Group and interventions will be required where results show that the overall design vision and landscape strategy for the development as articulated in the **Associated Development Design Principles (Doc. Ref. 10.1).**

6.1.3 Ecology monitoring of species must be carried out in accordance with **the Terrestrial Ecology Monitoring and Mitigation Plan** (Doc Ref. 10.28) (Requirement 4) and protected species licences as granted by Natural England and therefore is not duplicated here.

Table 6.1: Monitoring requirements

Habitat / Feature Type	Party responsible	Timing of Monitoring	Requirements
Establishment	SZC Co. until any agreements are made with the Highway Authority under Article 21 of the dDCO for adopting the highway	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. Therefore, the management and monitoring of the target habitats must be intensive during the first year and frequent over the subsequent four years to ensure any problems are identified early and resolved quickly. Inspections must be undertaken by a suitably qualified specialist. The inspections must be undertaken to assess the establishment of habitats and the effectiveness of this 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 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 must be investigated as soon as practically possible and remedial works undertaken as necessary Public Engagement. Public engagement must be undertaken to keep users of the site informed of the works. A monitoring report must be prepared and submitted to the Ecology Working Group.
Target Communities	SZC Co. until any agreements are made with the Highway Authority under Article 21 of the dDCO for adopting the highway.	Check bi-annually years 0, 1 and 2 Check annually year 3 - 5 Years 5-10 – A review of monitoring requirements must be undertaken in year 5 to detail timings for Years 5-10. If objectives are not met, then the LEMP must be amended.	Before and after enhancement, reinstatement or creation a full botanical species list and quality assessment must be carried out to monitor the success of restoration and as a baseline for monitoring. This must include the presence and abundance of species. The National Vegetation Classification may be an appropriate method for collecting data for monitoring or this may be bespoken to the target communities. This must also include monitoring with regards to achieving the desired communities and quality as demonstrated in the Biodiversity Net Gain Report [REP5-090]. Monitoring is essential to track the development of the target habitat(s) and troubleshoot any problems. Target communities are set below for each habitat type for years 1, 2, 5 and 10. Success must be monitored via the yearly monitoring surveys and reporting which must be submitted to the Ecology Working Group.

Habitat / Feature Type	Party responsible	Timing of Monitoring	Requirements
			Success shall be considered as the botanical assemblage achieving the desired communities and condition as demonstrated in the Biodiversity Net Gain Report.
Woodland	SZC Co. until any agreements are made with the Highway Authority under Article 21 of the dDCO for adopting the highway	As above	Targets will be set as part of the detailed design process according to thresholds identified for Section 41 of the Natural Environment and Rural Communities (NERC) Act (Ref. 1.5)/Suffolk Biodiversity Action Plan (Ref. 1.6) quality woodland in the Countryside Stewardship Higher Tier Scheme made specific to the site. Success shall be considered as the woodland establishment and species mix achieving the desired communities and condition as demonstrated in the Biodiversity Net Gain Report, i.e. broadleaved woodland of good condition. Regular checks, at least one per annum, must 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 must follow the Common Standards Monitoring Guidance for Woodland Habitats. This weights desirable species against the injurious ones.
Scattered/Specimen Trees	SZC Co. until any agreements are made with the Highway Authority	As above	Regular checks, at least one per annum, must 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

Habitat / Feature Type	Party responsible	Timing of Monitoring	Requirements
	under Article 21 of the dDCO for adopting the highway		fencing. Individual specimen trees planted as compensation for the loss of ancient or veteran trees must be monitored to ensure suitable space is available around the trees for an open crown to develop.
Hedgerows	SZC Co. until any agreements are made with the Highway Authority under Article 21 of the dDCO for adopting the highway	As above	Targets will be set as part of the detailed design process 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. Success shall be considered as the hedgerow establishment and species mix achieving the desired communities and condition as demonstrated in the Biodiversity Net Gain Report, i.e. 'Native Species Rich Hedgerow with trees - Associated with bank or ditch' typology or 'Native Species Rich Hedgerow with trees' typology of at least moderate condition. Regular checks, at least one per annum, must 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 must follow the Hedgerow Survey Handbook.
Grassland	SZC Co. until any agreements are made with the	As above	Regular checks, at least one per annum, of the newly established areas of grassland must be made during the first five years of establishment. Targets will be set as part of the detailed design process for each

Habitat / Feature Type	Party responsible	Timing of Monitoring	Requirements
	Highway Authority under Article 21 of the dDCO for adopting the highway		grassland type according to the species list gathered before construction and thresholds identified for Section 41 of the NERC Act /Suffolk Biodiversity Action Plan as well as the Joint Nature Conservation Committee guidance. Success shall be considered as the grassland establishment and species mix achieving the desired communities and condition as demonstrated in the Biodiversity Net Gain Report, i.e. 'Other neutral grassland' typology of good condition. Monitoring must follow the Common Standards Monitoring Guidance for Lowland Grassland. This weights desirable species against the injurious ones.
Ponds	SZC Co. until any agreements are made with the Highway Authority under Article 21 of the dDCO for adopting the highway	As above	Regular checks of the newly established ponds must be made during the first five years of establishment. Water and silt levels must be monitored in June annually. Targets will be set as part of the detailed design process for ponds according to thresholds identified for Section 41 of the NERC Act/Suffolk Biodiversity Action Plan as well as the Joint Nature Conservation Committee guidance. Success shall be considered as the hedgerow establishment and species mix achieving the desired communities and condition as demonstrated in the Biodiversity Net Gain Report, i.e. 'Lakes -Ponds (priority habitat)' or 'Lakes – Ponds (non-priority habitat)' typology of good condition.

Habitat / Feature Type	Party responsible	Timing of Monitoring	Requirements
Watercourses	SZC Co. until any agreements are made with the Highway Authority under Article 21 of the dDCO for adopting the highway	As above	Regular checks of the newly established habitats must be made during the first five years of establishment to confirm any requirements for vegetation control (to include scrub and aquatic/marginal vegetation) or sediment removal. These checks will also identify any pollution / eutrophication issues. Monitoring must follow the Common Standards Monitoring Guidance for Ditches and Common Standards Monitoring Guidance for Rivers.
Bat hop overs	SZC Co. until any agreements are made with the Highway Authority under Article 21 of the dDCO for adopting the highway	As above	Regular checks, at least one per annum, must be made during the first five years of establishment to replace dead or diseased specimens (of planted / transplanted trees), control weeds, re-stake plants as necessary and check deer/rabbit fencing. Individual specimen trees planted / transplanted should be monitored to ensure that suitable space is permitted for them to develop a full crown (which provides cover across the road above the traffic flow).
Year five survey and review	SZC Co.	Year 5	The following surveys, at a minimum, must be included in the year five review: 1 protected species surveys (including any protected species licensing conditions); 2 monitoring surveys of bat and bird boxes; and

Habitat / Feature Type	Party responsible	Timing of Monitoring	Requirements
			3 the reptile population. The results of the surveys must be reviewed to identify any revisions to the management measures deemed to be required to meet the objectives for the medium and long-term. Revised measures must be produced to guide the next five years. This information must be presented as a 'Five Year Monitoring Report' and submitted to the Ecology Working Group.

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).

2. Natural England (2015) NE544: NCA Profile: 83 South Norfolk and High Suffolk Claylands (online) http://publications.naturalengland.org.uk/publication/6106120561098752?category=587130 (Accessed 25 September 2020).

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. Mitigation measures detailed in 9.63 Comments at Deadline 6 on Submission from Earlier Submissions and Subsequent Written Submissions to ISH1-ISH6 - Appendices - Revision 1.0, Appendix C Sizewell Link Road Watercourse Crossing Mitigation Note [REP6-024]

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

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

APPENDIX A: SIZEWELL LINK ROAD – WATERCOURSE CROSSINGS MITIGATION NOTE

CONTENTS

TABLES

PLATES

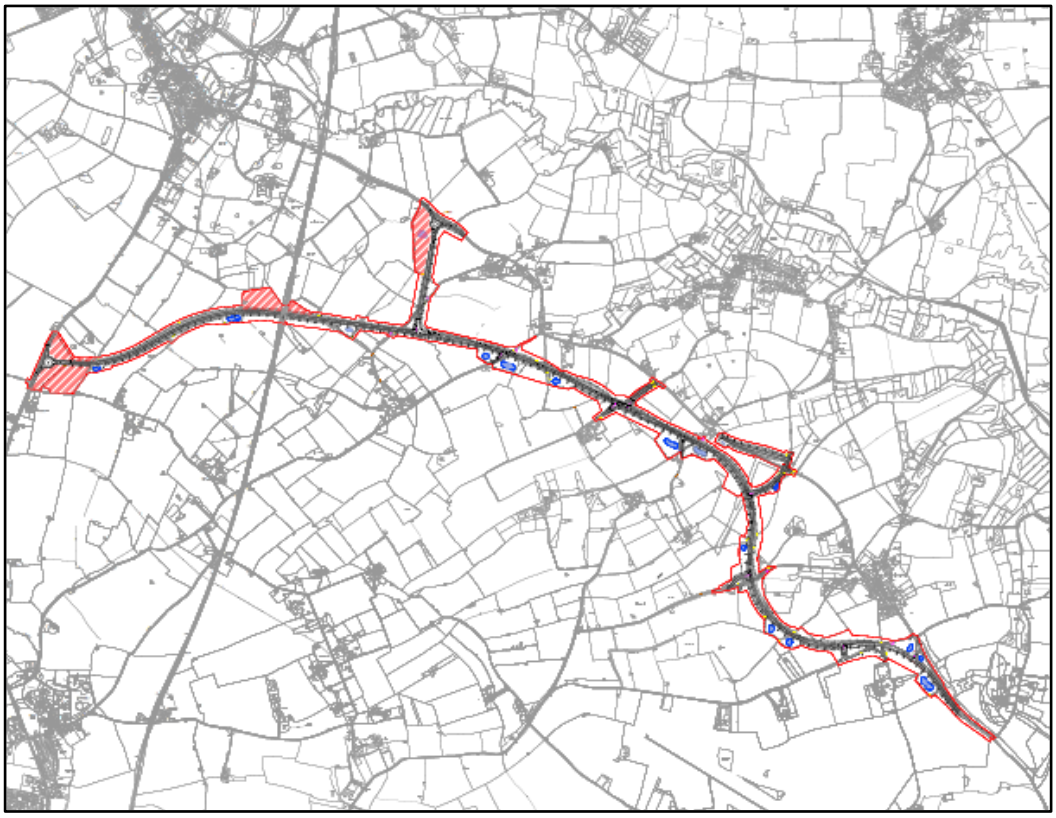
1 INTRODUCTION

1.1.1 NNB Generation Company (SZC) Limited (SZC Co.) submitted an application for a Development Consent Order (DCO) to the Planning Inspectorate under the Planning Act 2008 for the Sizewell C Project (referred to as the 'Application') in May 2020. The Application was accepted for examination in June 2020.

1.1.2 SZC Co. has undertaken work to validate and develop the design of the Sizewell link road that was originally submitted as part of the DCO application. This document forms one of a series of design validation and evolution documents being provided to the Examining Authority in support of the **Outline Drainage Strategy** [REP2-033].

1.1.3 The Sizewell link road is one of the Sizewell C Project's associated development sites; a permanent single carriageway road that would run 6.8km from the A12 just south of Yoxford in an easterly direction, joining the B1122 south of the town of Theberton. A large scale plan showing the route of Sizewell link road is shown in **Plate 1**.

Plate 1: Sizewell Link Road Location and Route



1.1.4 The Sizewell link road would create a new route around the south of the villages of Yoxford, Middleton Moor and Theberton, helping to reduce the amount of traffic on the B1122 during the peak construction phase of the Sizewell C Project.

1.1.5 The Sizewell link road will be designed to Suffolk County Council's (SCC) adoptable standards as follows:

- Design Manual for Roads and Bridges (DMRB)/ Manual of Contract Documents for Highway Works (MCHW);
- CIRIA C753 The SuDS Manual;
- Sustainable Drainage Systems (SuDS) a Local Design Guide Appendix A to the Suffolk Flood Risk Management Strategy, Suffolk County Council, May 2018; and
- Suffolk SuDS Palette (SSP) – Guidance Suffolk County Council.

1.1.6 The Sizewell link road would cross six watercourses that were identified as part of the **Sizewell Link Road Flood Risk Assessment** (FRA) [APP-136].The location of the watercourses and crossings is shown in **Plate 2 and summarised in Table 1**. The watercourses are identified by the arrows and the crossings are marked green and labelled 'WC1', 'WC2' etc.

Plate 2: Sizewell Link Road Watercourse Crossings

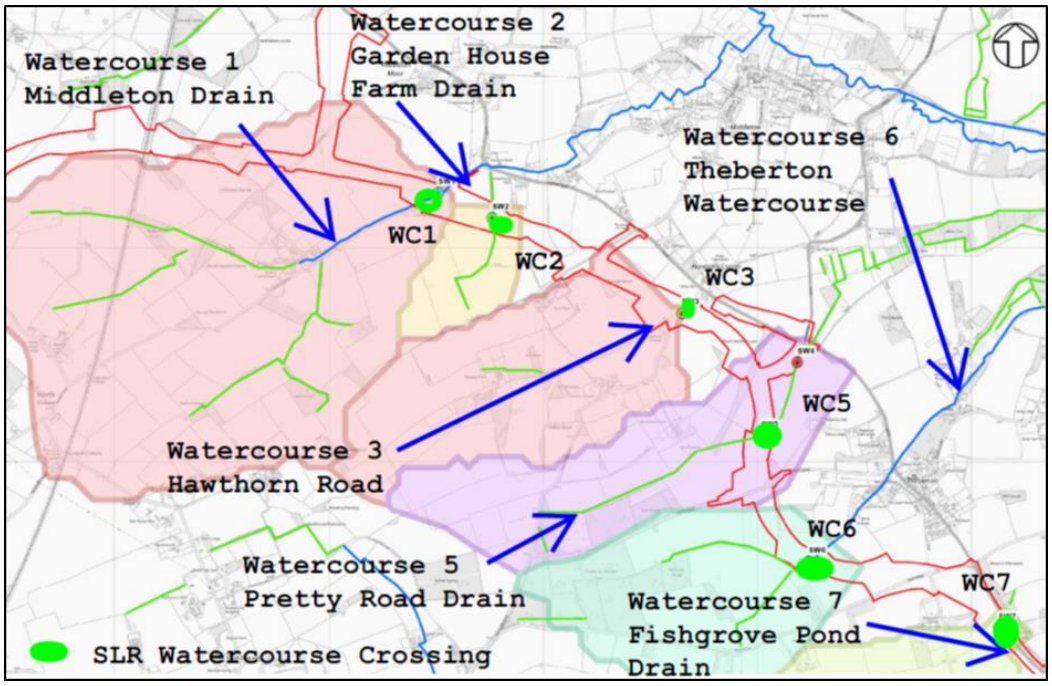


Table 2: FRA referenced DCO Concept Drainage Watercourse Crossings (Note: Crossing No's & Watercourse No's are consistent with those used in the SLR FRA Addendum [APP-136])

Crossing Number	Watercourse Number	Watercourse Name	Legal Status/Regulator
1	1	Middleton Drain	Main River EA
2	2	Garden House Farm Drain	Ordinary Watercourse SCC
3	3	Hawthorn Road Drain	Ordinary Watercourse SCC
4	5	Pretty Road Drain Leiston Road Crossing	Ordinary Watercourse SCC
5	5	Pretty Road Drain	Ordinary Watercourse SCC
6	6	Theberton Watercourse	Main River EA
7	7	Fishpond Grove Drain	Ordinary Watercourse SCC

1.1.7 Separate columns are provided for crossing no.'s and watercourse no's because Watercourse No 5 is crossed twice (crossing no's 4 & 5).

1.1.8 The Flood Risk Assessment identified crossing 4 located on Pretty Road Drain, which is included in the table for completion. This is an existing culvert crossing of the B1122 near to its junction with the B1125. At the time of undertaking the assessment, it was unclear as to whether the culvert would require replacement or modification. However, following completion of the Preliminary Drainage design, it is confirmed that this culvert won't be affected by development as explained in **Sizewell Link Road FRA Addendum** [REP2-026]. As a result, this crossing is not considered further within this note. This is also the reason it is not shown on Plate 2 above.

1.1.9 In addition to the six watercourses that would be affected, three local field ditch crossings have been identified following a site visit in January 2021.

1.1.10 The presence of local watercourses situated on either side of Pretty Road has also been identified following a site visit in February 2021. Since Sizewell link road crosses Pretty Lane in a cutting, the current outfalls for these watercourses would be removed, so these drains would be affected.

They are therefore considered in this note alongside the three field ditches.

2 PURPOSE

2.1.1 The **Outline Drainage Strategy** [REP2-033] identified at concept level the proposed drainage approach required for:

- The effective removal of runoff from the proposed Sizewell link road highway and its disposal;
- The crossing of watercourses along the line of the Sizewell link road.

2.1.2 This strategy was developed in consultation with drainage regulators and local authorities, including SCC and the Environment Agency (EA). A number of workshops were held and the observations/requirements of drainage regulators were incorporated in the strategy.

2.1.3 It was agreed that Sizewell Link Road watercourse crossings 1, 2, 3, 5 and 6 would be constructed as portal culverts in which the culvert would straddle the channel and bank leaving them in natural state to avoid impacts on bed geomorphology and also mitigate effects on the upstream and downstream movement of mammals, especially otter, which was recognised in the **Environment Statement** (APP-461) as being likely to use these ditches as migration corridors within the landscape. However, the culvert crossings would result in a loss of watercourse habitat that will require mitigation.

2.1.4 At watercourse crossing 7 to the east of Theberton, the watercourse crosses beneath the B1122 in a 450 mm diameter pipe. This pipe would need to be extended upstream to a point clear of the proposed link road.

2.1.5 The design of infrastructure for the removal of highway runoff has also been developed in consultation with drainage regulators and local authorities, including SCC and the EA. In accordance with the required design standards and SCC requirements, the drainage will incorporate Sustainable Drainage Systems (SuDS) treatment to mitigate any increased pollution risk to the receiving watercourses. The provision of such SuDS infrastructure has the potential to offset watercourse habitat loss and deliver significant enhancement subject to their design also maximising biodiversity.

2.1.6 The purpose of this report is to:

- quantify the balance between watercourse loss due to culverting and gain due to provision of new watercourses;

- confirm the potential watercourse works that can be undertaken to enhance watercourse appearance, biodiversity and habitat;
- confirm the range of SuDS measures to be considered for incorporation in the highway drainage infrastructure to be offered for adoption by SCC.

3 WATERCOURSE LOSS AND GAIN

3.1.1 The loss of open watercourse due to culverting and gains due to watercourse diversion or culvert removal are **summarised in Table 2**.

Table 3: Balance of Watercourse Loss and Gains

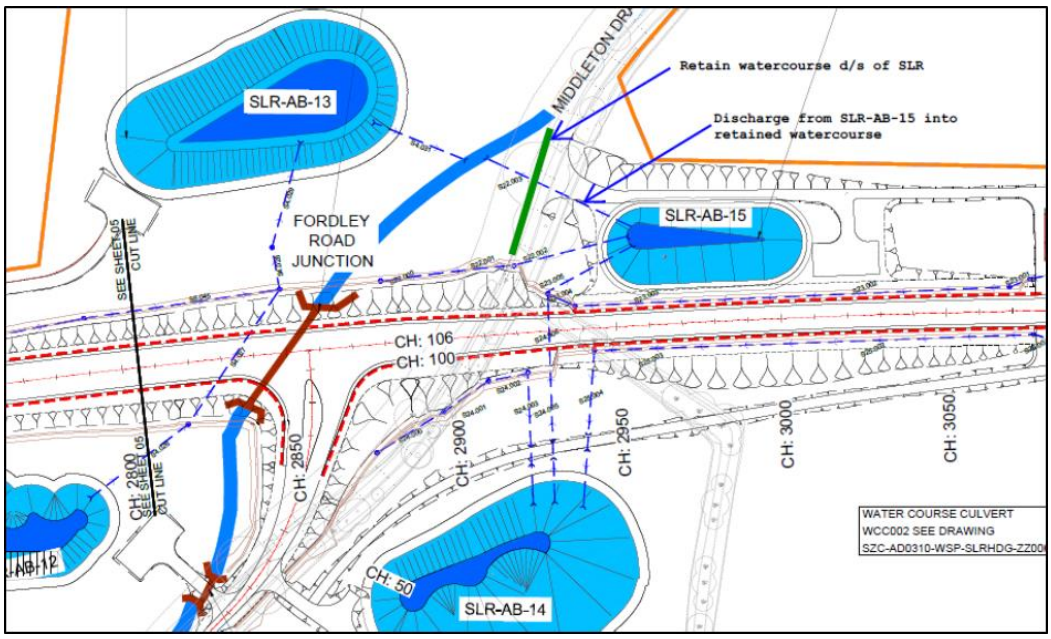
Crossing Number and/or Diversion and/or Culvert	Watercourse Number	Watercourse Name	Watercourse Loss metres	Watercourse Gain metres
1 Replacement culvert (extended)	1	Middleton Drain	39	-
Watercourse Diversion	1	Middleton Drain	126	170
2 New culvert	2	Garden House Farm Drain	38	-
3 New culvert	3	Hawthorn Road Drain	36	-
5 Replacement culvert	5	Pretty Road Drain	34	10
Watercourse Diversion	5	Pretty Road Drain	-	300
6 New culvert	6	Theberton Watercourse	24	-
Watercourse Diversion	6	Theberton Watercourse	-	420
7 New culvert	7	Fishpond Grove Drain	36	-
Land drainage ditch 1. New culvert	-	-	48	-

Crossing Number and/or Diversion and/or Culvert	Watercourse Number	Watercourse Name	Watercourse Loss metres	Watercourse Gain metres
Land drainage ditch 2. New culvert	-	-	58	-
Land drainage ditch 3. New culvert	-	-	72	-
		Combined Total	**511**	**900**

3.1.2 It can be seen that as a result of the requirement for diverting part of Middleton Drain to accommodate the Fordley Road slip road and the tributary watercourse at Pretty Road, there is a significant net increase in watercourse as a result of construction the Sizewell link road.

3.1.3 The Middleton Drain diversion is shown in **Plate 3**. The length upstream of Sizewell link road is abandoned but the length downstream shown green is proposed to be retained and expanded upon to create wetland habitat.

Plate 3: Middleton Drain Watercourse Diversion



3.1.4 The Pretty Road tributary diversions are shown green in **Plates 4 and 5**.

Plate 4: Pretty Road Drain Watercourse Diversion West to Pretty Road Drain

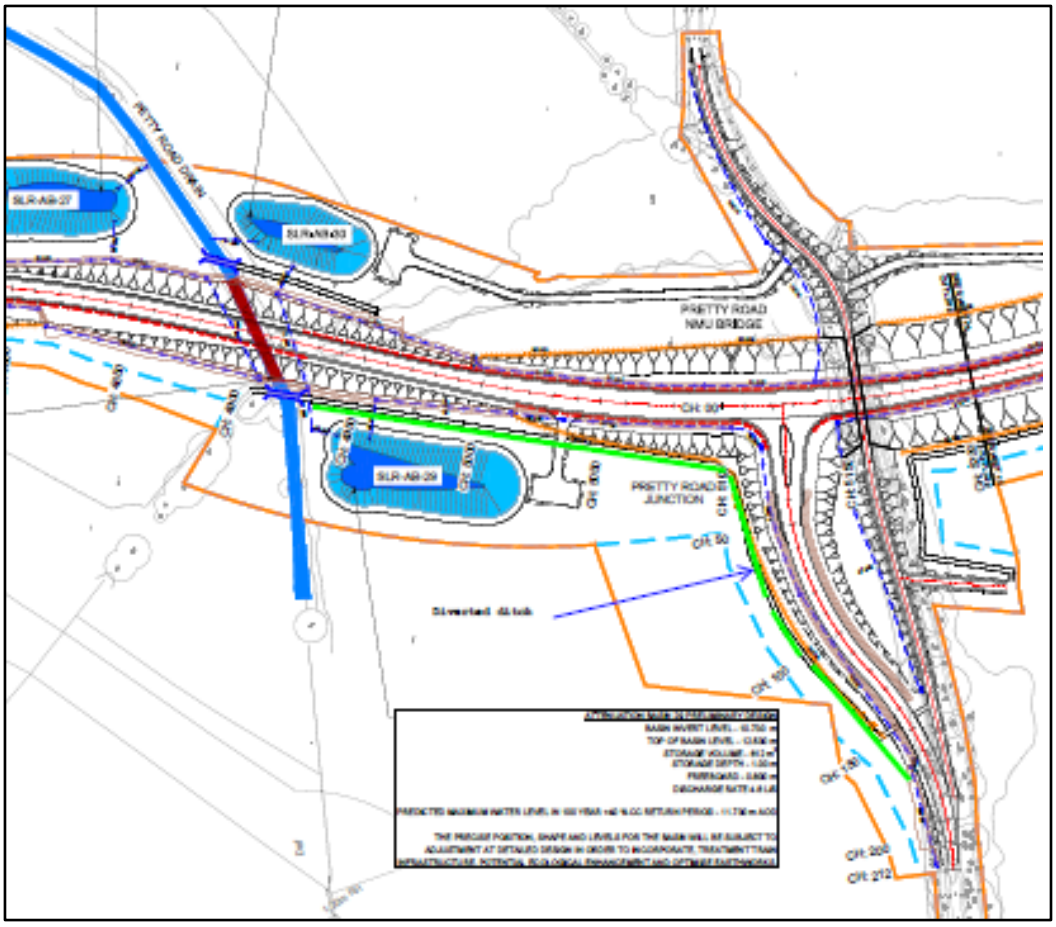
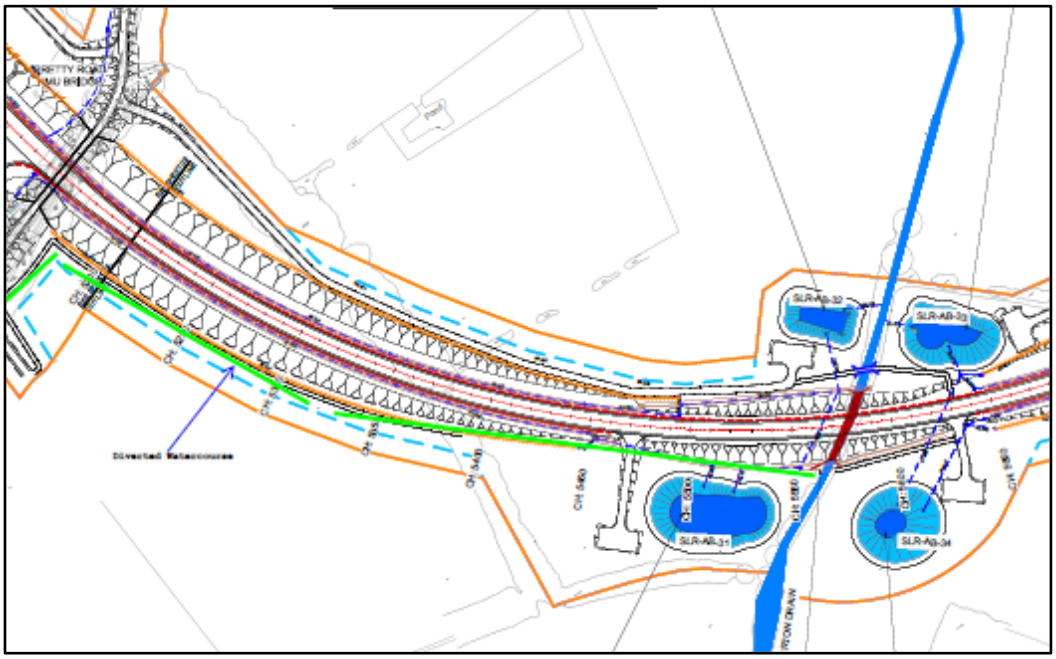


Plate 5: Pretty Road Drain Watercourse Diversion East to Theberton Watercourse



4 POTENTIAL FOR WATERCOURSE ENHANCEMENT

4.1.1 The watercourses impacted by the Sizewell link road are of varying size and significance in terms of conveyance of flows. Middleton Drain and Theberton Watercourse are classed as main river and are observed to normally have a continuous flow. The remainder are classed as ordinary watercourses and have been observed to be ephemeral.

4.1.2 Further engagement was undertaken with the EA in July 2021 at which it was agreed that SZC Co. would develop proposals to enhance the existing and diversion watercourses as far as possible, within existing constraints and order limits, to mitigate habitat loss and maximise biodiversity.

4.1.3 The EA directed SZC Co. to the following references: “River Rehabilitation Guidance for Eastern England Rivers” dated November 2005; and “Intermittent rivers and ephemeral streams: what water managers need to know” published by the Science & Management of Intermittent Rivers & Ephemeral Streams (Ed. Claire Magand et al., June 2020) which are noted.

4.1.4 SZC Co. is committed to mitigating the impact of loss of watercourses and delivering enhancement of the existing watercourses within the extent of land which will form part of permanent land take for the Sizewell link road in order to offset these losses and deliver overall biodiversity net gain. This land will transfer to SCC upon adoption of the road. The land take is typically 50 m upstream and downstream of the proposed new portal culverts. In addition, SZC.Co. commits to include natural enhancement features within the three watercourse diversions shown on Plates 3, 4 & 5 above. At Middleton drain, the retained section of ditch will be augmented with new wetland habitat such as a scrape to be provided within the triangular area bounded by the existing retained and proposed new diverted watercourse.

4.1.5 The design of these natural enhancement features will be included in Detailed Design for the SLR drainage scheme, and both the EA and SCC will be invited to comment on the proposals during design development.

4.1.6 It is anticipated that the features will include, but not be limited to:

- Varying channel width and bank gradient
- Creation of irregular pools of varying depth to create habitat mosaic
- Backwaters and side channels
- Berms
- Bends

- Woody dams and other natural obstructions

4.1.7 Whilst including enhancement features in Detailed Design it will be important to also ensure that there is no adverse impact of flow conveyance and increase in off-site flood risk to adjacent land.

5 REQUIRED HIGHWAY DRAINAGE SUDS INFRASTRUCTURE LANDSCAPING AND HABITAT ENHANCEMENT

5.1.1 In accordance with the SCC adoptable standards referenced in 1.1.5 above the Sizewell link road design incorporates SuDS drainage that has landscaping and habitat value. As stated in the SuDS Pallet “Landscape planting should be done to both replicate existing habitat, provide treatment of the surface water, offer biodiversity and amenity value. However, the planting should be done to recreate new habitat where appropriate so that it is adaptable to climate change”.

5.1.2 The Sizewell link road design that was originally submitted as part of the DCO application included proposed landscaping plans and drainage features including a number of infiltration basins and swales. However, ground investigations carried out subsequently confirmed that infiltration was not feasible. The drainage design has therefore been updated in favour of attenuation basins. An estimated 34 attenuation basins are proposed that would generally drain to vegetated channels and swales. The drainage infrastructure will require to be kept separate from the existing watercourse in order to ensure a satisfactory level of treatment prior to disposal.

5.1.3 Landscaping and habitat creation in accordance with the recommendations contained in the SuDS Manual and the SuDS palette will be developed as part of Detailed Design.

5.1.4 Where space permits the final outfall from attenuation basin to watercourse discharge point will be constructed in open channel to assist with enhancement of the watercourse.

6 SUMMARY AND CONCLUSION

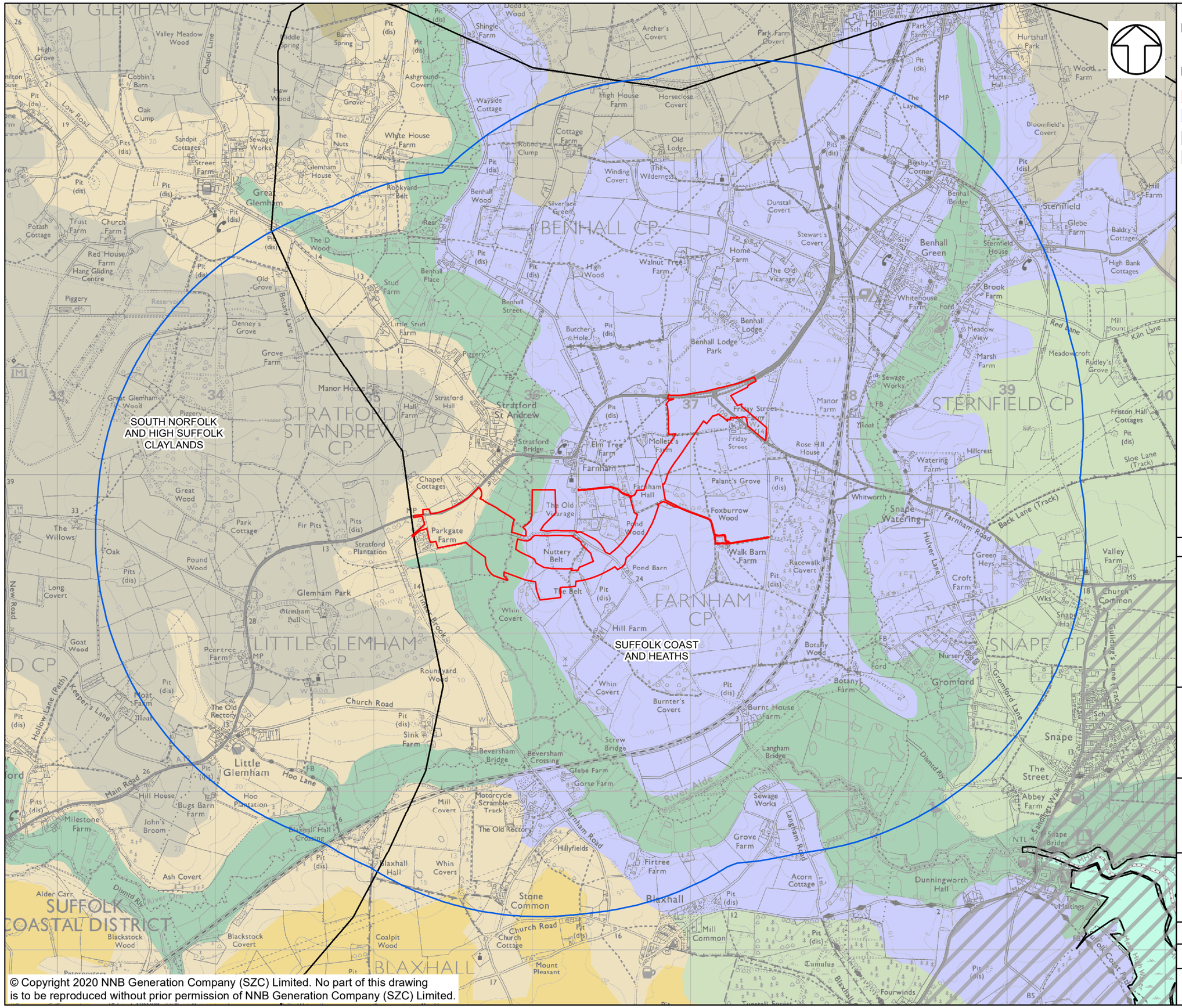
6.1.1 The purpose of this note is to quantify the losses and gains of watercourses that result from the construction of Sizewell link road and to set out proposed mitigation and enhancement measures to offset any losses.

6.1.2 The proposed drainage works as outlined in this report would result in a **net gain** of approximately 389m of watercourse habitat (see Table 2).

6.1.3 All new ditches would be designed to maximise their ecological function and biodiversity, alongside their hydraulic and other technical requirements.

6.1.4 In addition, an estimated 34 attenuation basins would be constructed as part of SuDS. These basins and associated drainage channels would also be designed to maximise ecological function and biodiversity through use of SCC's SuDS palette.

FIGURES



NOTES

KEY

- TWO VILLAGE BYPASS DEVELOPMENT SITE BOUNDARY
- STUDY AREA (2KM FROM SITE BOUNDARY)
- AREA OF OUTSTANDING NATURAL BEAUTY (AONB)
- NATIONAL CHARACTER AREAS

LANDSCAPE CHARACTER TYPES

- ANCIENT ESTATE CLAYLANDS
- ESTATE SANDLANDS
- PLATEAU ESTATE FARMLANDS
- ROLLING ESTATE CLAYLANDS
- ROLLING ESTATE SANDLANDS
- ROLLING VALLEY CLAYLANDS
- SALTMARSH AND INTERTIDAL FLATS
- VALLEY MEADOWLANDS

NOT PROTECTIVELY MARKED

DOCUMENT:
SIZEWELL C
LANDSCAPE AND ECOLOGY MANAGEMENT PLAN (LEMP)
TWO VILLAGE BYPASS

DRAWING TITLE:
LANDSCAPE CHARACTER WITHIN 2KM

DRAWING NO:
FIGURE 1

DATE:	DRAWN:	SCALE :
JUL 2021	V.W.	1:22,500 @A3

SCALE BAR
0 0.2 0.4 0.6 0.8 1 KM

NOTES

KEY

- TWO VILLAGE BYPASS DEVELOPMENT SITE BOUNDARY
- TARGET NOTE
- SCATTERED SCRUB
- SCATTERED BROADLEAVED TREES
- SCATTERED CONIFEROUS TREES
- DRY DITCH
- DEFUNCT HEDGE - SPECIES-POOR
- DEFUNCT HEDGE - NATIVE SPECIES-
- FENCE
- HEDGE WITH TREES - NATIVE SPECIES-
- HEDGE WITH TREES - SPECIES-
- INTACT HEDGE - SPECIES-POOR
- INTACT HEDGE - NATIVE SPECIES-RICH
- RUNNING WATER
- WALL
- A — CULTIVATED/DISTURBED LAND -
- A — CULTIVATED/DISTURBED LAND - AMENITY GRASSLAND
- BUILDINGS
- BROADLEAVED WOODLAND - SEMI-
- HARDSTANDING
- INTRODUCED SHRUB
- SI — POOR SEMI-IMPROVED GRASSLAND
- I — IMPROVED GRASSLAND
- SCRUB - DENSE/CONTINUOUS
- OTHER TALL HERB AND FERN -
- NO ACCESS

NOT PROTECTIVELY MARKED

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DOCUMENT:
SIZEWELL C
LANDSCAPE AND ECOLOGY MANAGEMENT PLAN (LEMP)
TWO VILLAGE BYPASS

DRAWING TITLE:
PHASE 1 HABITAT PLAN FOR TWO VILLAGE BYPASS

DRAWING NO:
FIGURE 2

DATE:	DRAWN:	SCALE :	REV:
JULY 2021	R.G.	1:7,500 @A3	01

SCALE BAR
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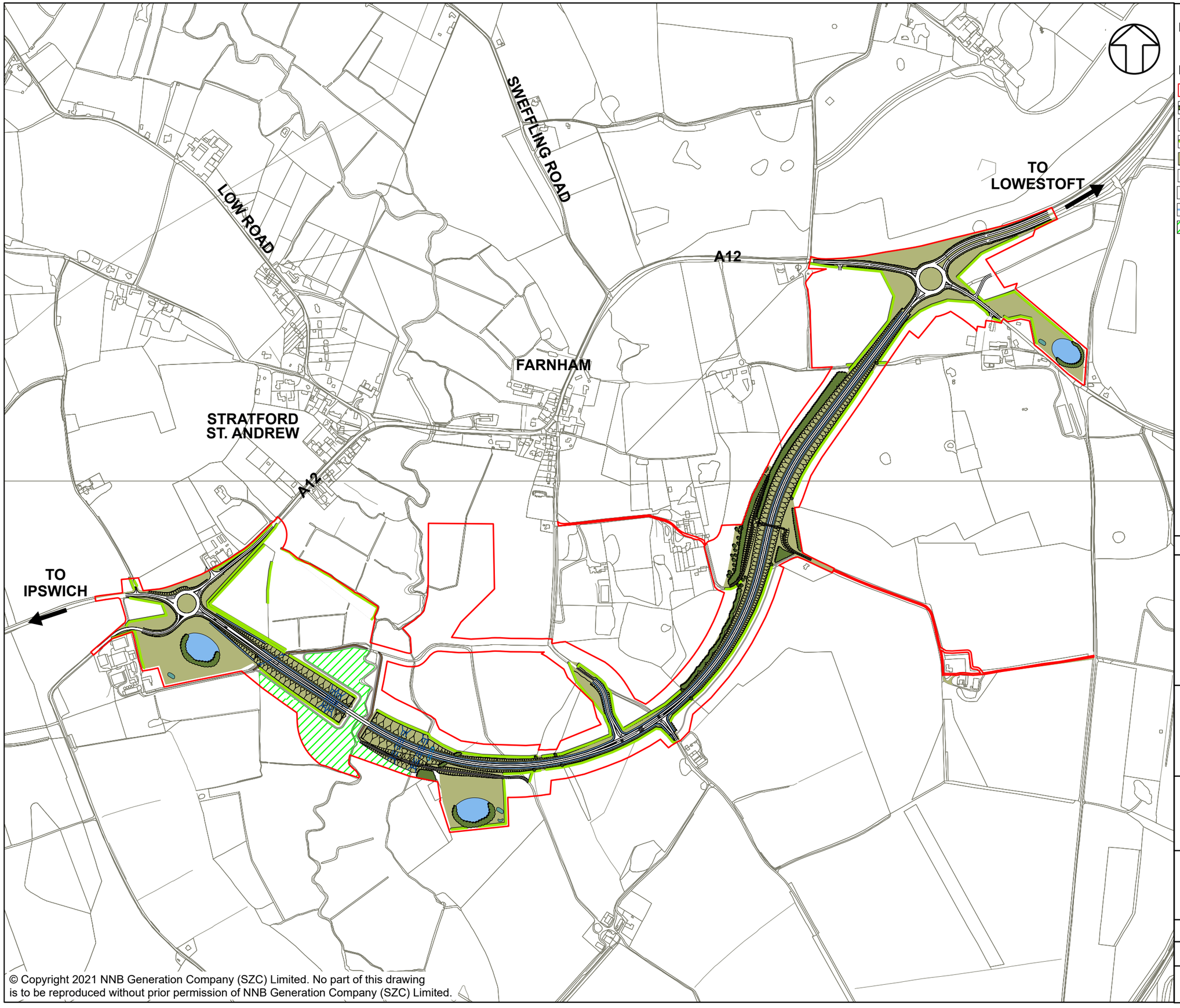

NOTES

KEY

- TWO VILLAGE BYPASS DEVELOPMENT SITE BOUNDARY
- BROADLEAVED WOODLAND
- SCATTERED TREES
- NATIVE HEDGEROW
- GRASSLAND
- INDICATIVE POND
- INDICATIVE ATTENUATION BASIN
- INDICATIVE SWALE
- INDICATIVE FLOODPLAIN GRASSLAND MITIGATION AREA

NOT PROTECTIVELY MARKED

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DOCUMENT:
SIZEWELL C
LANDSCAPE AND ECOLOGY MANAGEMENT PLAN (LEMP)
TWO VILLAGE BYPASS

DRAWING TITLE:
HABITAT TYPOLOGY

DRAWING NO:
FIGURE 3

DATE:	DRAWN:	SCALE :
OCT 2021	V.W.	1:25,000 @A3

SCALE BAR
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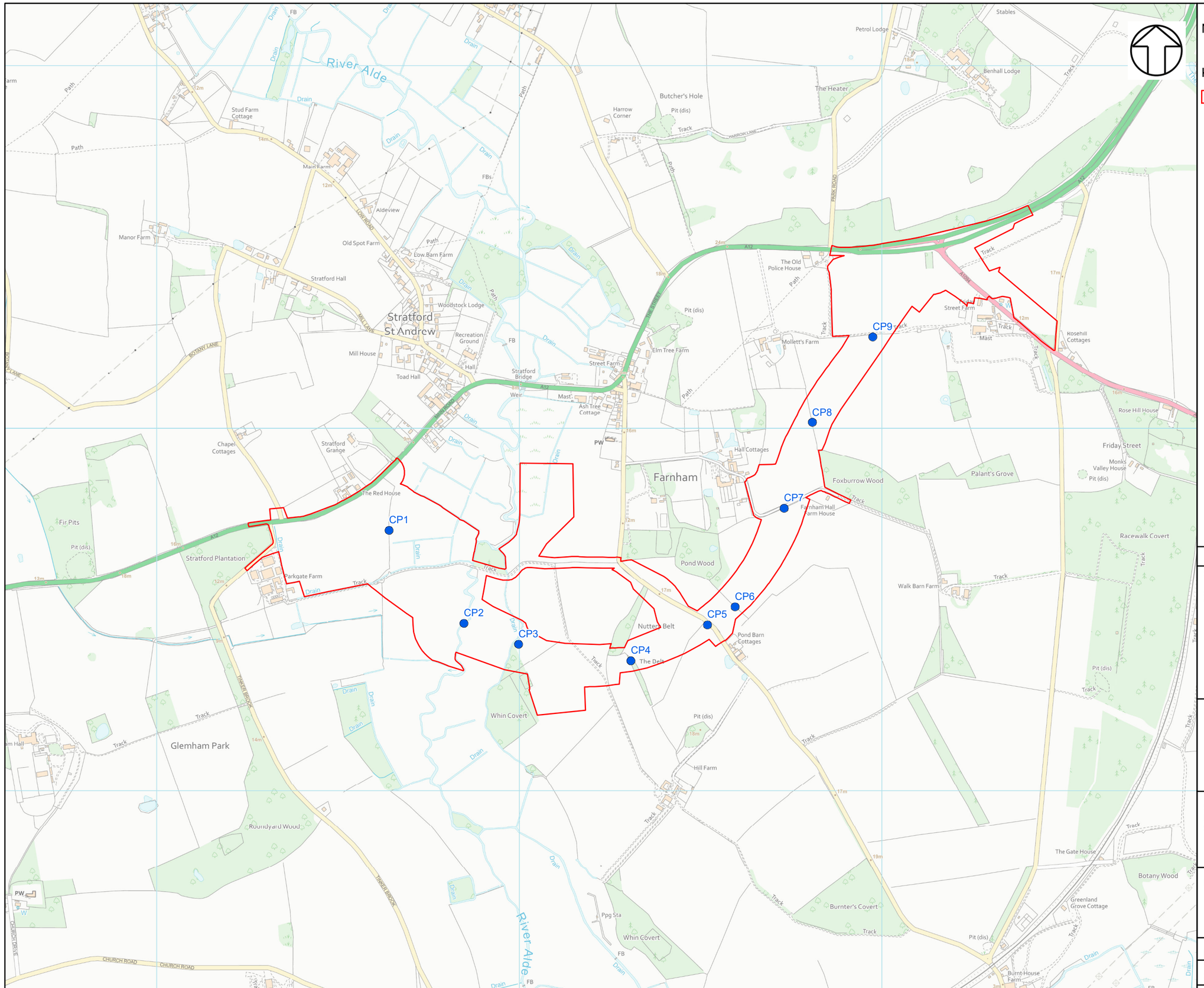

NOTES

KEY

TWO VILLAGE BYPASS DEVELOPMENT SITE BOUNDARY

POTENTIAL BAT 'HOP-OVER' LOCATIONS

NOT PROTECTIVELY MARKED

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DOCUMENT:
SIZEWELL C
LANDSCAPE AND ECOLOGY MANAGEMENT PLAN (LEMP)
TWO VILLAGE BYPASS

DRAWING TITLE:
POTENTIAL BAT 'HOP-OVER' LOCATIONS

DRAWING NO:
FIGURE 4

DATE:	DRAWN:	SCALE :	REV:
OCT 2021	R.C.	1:10,000 @A3	01

SCALE BAR
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